SY-5EMA Pro

Super 7 ™

Motherboard

****

Pentium® Class CPU supported

ETEQ82C663 PCI/AGP Motherboard

ATX Form Factor

****

User's Guide

&

Technical Reference

NSTL "Year 2000 Test" Certification Letter

November, 1998

Testing Date: November 6, 1998
Certification Date: November 6, 1998
Certification Number: NCY2000-981106-005

To Whom It May Concern:

We are please to inform you that the "SY-5EMA+" system has passed NSTL Year 2000 certification test program. The Year 2000 test program tests a personal computer for its ability to support the year 2000. The "SY-5EMA+: system is eligible to carry the NSTL :Year 2000 Certification" seal.

The Year 2000 certification test has been done under the following system configuration:

Company Name	: SOYO COMPUTER INC.
System Model Name	: SY-5EMA+
Hardware Revision	: N/A
CPU Model	: Intel Pentium 233/66Mhz
On Board Memory/L2 Cache	: SDRAM DIMM 32MBx1 /1MB
System BIOS	: Award Modular BIOS V4.51PG, 09/07/1998-VP3-586B-8669-2A5LES2BC-00

Best regards,

Summer Chien
NSTL/ALLION Labs
Vice President

SPORTON INTERNATIONAL INC.

Declaration of Conformity

According to 47 CFR, Part 2 and 15 of the FCC Rules

Declaration No.: D8D0404

Dec. 09, 1998'

The following designated product

EQUIPMENT: Main Board

MODEL NO.: SY-5EMA+

which is the Class B digital device complies with 47 CFR Parts 2 and 15 of the FCC rules.

Operation is subject to the following two conditions : (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The product was tested with the following configuration:

Monitor: SONY/AK8GDM17SE2T	**Printer:** HP/DS17XU2225
USB Mouse: WINIC/F4ZFDM-A50	**PS/2 Keyboard:** SILITED/GYUM99SK
PS/2 Mouse: GENIUS/FSUGMZFC	**Modem:** ACEEX/IF AXDM1414

This declaration is given for the manufacturer

SOYO COMPUTER INC.

No.21, Wu-Kung 5 Rd., Hsing Chuang City,

Taipei Hsien, Taiwan, R.O.C.

The test was carried out by

SPORTON INTERNATIONAL INC.

6F, No. 106, Hsin Tai Wu Rd., Sec. 1, His Chih,

Taipei Hsien, Taiwan, R.O.C.

Manufacturer Signature

SPORTON LAB. Signature

About This Guide

This User's Guide is for assisting system manufacturers and end users in setting up and installing the Motherboard. Information in this guide has been carefully checked for reliability; however, no guarantee is given as to the correctness of the contents. The information in this document is subject to change without notice.

Trademarks

Soyo is a registered trademark of Soyo Computer Inc. All trademarks are the property of their owners.

Disclaimer

Soyo Computer Inc. makes no representations or warranties regarding the contents of this manual. We reserve the right to revise the manual or make changes in the specifications of the product described within it at any time without notice and without obligation to notify any person of such revision or change. The information contained in this manual is provided for general use by our customers. Our customers should be aware that the personal computer field is the subject of many patents. Our customers should ensure that their use of our products does not infringe upon any patents. It is the policy of Soyo Computer Inc. to respect the valid patent rights of third parties and not to infringe upon or assist others to infringe upon such rights.

Restricted Rights Legend

Use, duplication, or disclosure by the Government is subject to restrictions set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at 252.277-7013.

Product Rights

Products mentioned in this manual are mentioned for identification purpose only. Product names appearing in this manual may or may not be registered trademarks or copyrights of their respective companies.

If you need any further information, please come to our home page on the Internet. The address is **"http://www.soyo.com.tw"**.

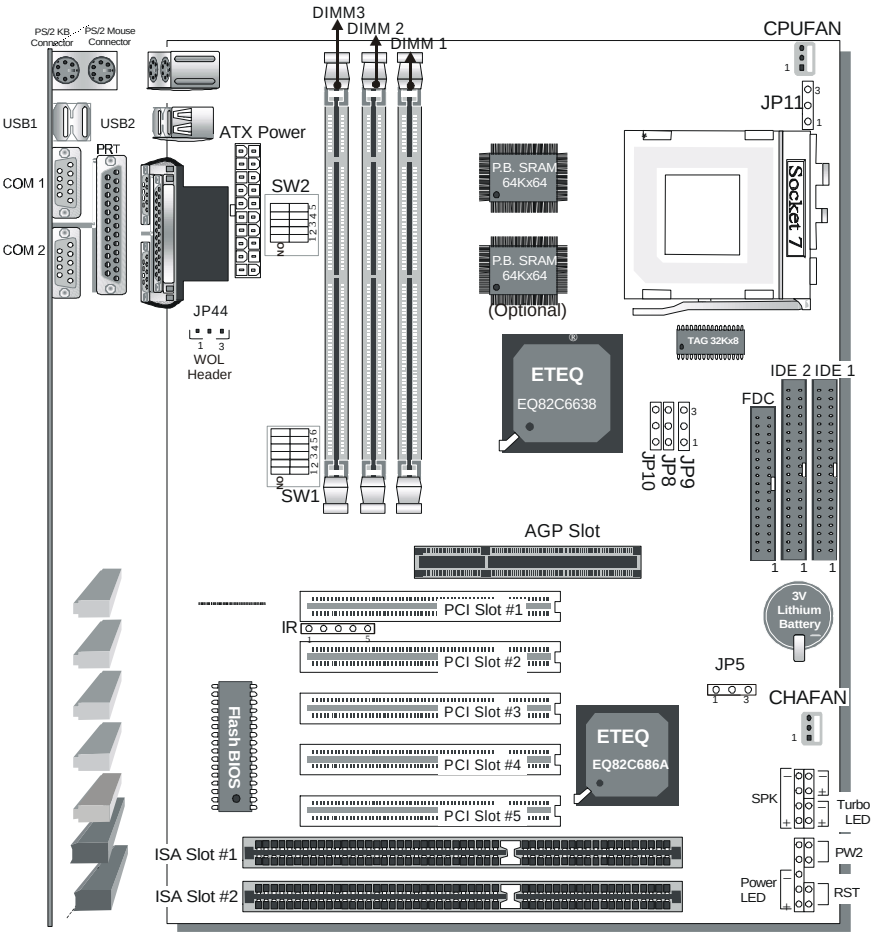
Edition: June 2000
Version 1.0
5EMA Pro SERIAL

FC Tested To Comply With FCC Standards
FOR HOME OR OFFICE USE

100% POST CONSUMER RECYCLED PAPER

Table of Contents

SY-5EMA Pro Motherboard Layout



Back Panel **SY-5EMA Pro Platform**

Chapter 1

INTRODUCTION

The **SY-5EMA Pro** AGP/PCI Motherboard is a high-performance ATX form-factor system board. **SY-5EMA Pro** uses the ETEQ82C663 PCI Chipset technology and supports Pentium® class processors. This Motherboard is fully compatible with industry standards and adds many technical enhancements.

1-1 KEY FEATURES

- Supports Intel Pentium Processor P54C/P55C series CPUs featuring speeds of 100-233 MHz
- Supports Cyrix 6x86/6x86L/6x86MX CPUs with PR150-PR266 MHz speeds and Cyrix M II-300-366 MHz speeds CPU
- Supports AMD K5 CPUs running at PR100-PR166 MHz speeds, AMD K6 CPUs running at speeds of 166-300 MHz speeds, AMD K6-2 266-550 MHz Speeds CPU and AMD K6-III 400-450 MHz speeds CPU
- Supports IDT X86 CPU C6/2-200/225, IDT WinCip 2-233-300 MHz speeds CPU
- Supports Rise mP6 PR-266 MHz speeds CPU
- Features Socket 7 for CPU easy upgrade
- Supports P54C/P55C series SIMM Mode and CPU Stop Clock

- **L2 Cache Controller**
  - On-board 512KB/1M Level 2 Pipeline Burst SRAM Cache

- **DRAM Controller**
  - Supports 3 strips of 168-pin SDRAM unbeffured DIMM
    3 x 168-pin DIMM banks support 8/16/32/64/128/256 MB unbuffered DIMM modules
  - Memory configuration:
    - System memory: 8MB to 768MB with EDO/SDRAM

SY-5EMA Pro PLATFORM FEATURES

Board Size	4-layer PCB, 19x30.5cm(7.5"x12"), ATX Form Factor
Socket 7	Socket for Pentium® class CPUs with Host Bus frequency of 66/100MHz Supports: ➢ Intel Pentium® Processors P54C/P55C (100-233MHz) ➢ Cyrix 6x86 ™(PR166+-PR200+), Cyrix 6x86 MX ™(PR166-PR266) and Cyrix M II ™ (300~366) ➢ AMD K5 ™(PR100-PR166), and AMD K6 ™(166-300) and AMD K6 ™2 (266~550) and AMD K6™-III 400/450 ➢ IDT X86 CPU C6/W2 200/225 and X86 CPU 2 (233-300) ➢ Rise mP6 PR266
Chipset	ETEQ82C663 PCI/AGP Bus Chipset
ATX Power	20-pin Male Connector
CPUFAN	3-pin CPU Cooling Fan Connector
CHAFAN	3-pin Chassis Cooling Fan Connector
Memory	DIMM Bank (DIMM1 & DIMM2 & DIMM3) ➢ 168-pin Unbuffered SDRAM DIMM Module ➢ Supports 8~256MB DIMM in each Bank ➢ Supports ECC configuration
BIOS	System BIOS built-in, Award BIOS ➢ APM, ACPI and "Plug-and-Play" function ➢ Supports multiple-boot function ➢ Y2K Compliant
PCI Slots	5 x 32-bit Bus Mastering Slots
ISA Slots	2 x 16-bit ISA Slots
IDE1, IDE2	2 x 40-pin Bus Mastering E-IDE/ATAPI Ports ➢ IDE1: Primary IDE Device Connector ➢ IDE2: Secondary IDE Device Connector ➢ Supports Ultra DMA/33
FDC	1 Floppy Disk Drive (FDD) Port (Supports 1.2MB/1.44MB/2.88MB and LS120/3-mode FDD)

SIR	5-pin Serial Infrared Device Connector
Keylock	5-pin KeyLock Connector
Reset	2-pin Reset Switch Connector
Speaker	4-pin PC Speaker Connector
TB_LED	2-pin Turbo LED Connector
HDD_LED	2-pin IDE Device LED Connector
PWRBT	ATX Power On/Off Switch 2-pin Connector
JP5	CMOS Clear Jumper
JP8	CPU bus clock frequency Jumper
JP9, JP10	SDRAM frequency Jumpers
JP11	CPU Frequency of 83MHz Jumper
JP44	WOL (Wake-On-LAN) 3-pin Connector
SW1	CPU frequency Settings Jumper
SW2	CPU Voltage Selection Jumper

BACK-PANEL FEATURES

PRT	1 x Onboard 25-pin Female Parallel Printer Port
COM1, COM2	2 x Onboard RS-232 Serial Port
PS/2 KB	1 x Onboard PS/2 Keyboard Connector
PS/2 Mouse	1 x Onboard PS/2 Mouse Connector
USB1, USB2	2 x Onboard USB (Universal Serial Bus) Connectors

1-2 HANDLING THE MOTHERBOARD

To avoid damage to your Motherboard, follow these simple rules while unpacking:

- Before handling the Motherboard, ground yourself by grasping an unpainted portion of the system's metal chassis.
- Remove the Motherboard from its anti-static packaging. Hold the Motherboard by the edges and avoid touching its components.
- Check the Motherboard for damage. If any chip appears loose, press carefully to seat it firmly in its socket.

Warning: Do not apply power if the Motherboard appears damaged. If there is damage to the board, contact your dealer immediately.

1-3 ELECTROSTATIC DISCHARGE PRECAUTIONS

Make sure to ground yourself before handling the Motherboard or other system components. Electrostatic discharge can easily damage the components. Note that you must take special precautions when handling the Motherboard in dry or air-conditioned environment.

To protect your equipment from electrostatic discharge, take the following precautions:

- Do not remove the anti-static packaging until you are ready to install.
- Ground yourself before removing any system component from its protective anti-static packaging. (To ground yourself, grasp the expansion slot covers or other unpainted portions of the computer chassis.)
- Frequently ground yourself while working or use a grounding strap.

Chapter 2

HARDWARE SETUP

Congratulations on your purchase of **SY-5EMA Pro** Super 7 ™ Motherboard. You are about to install and connect your new Motherboard.

Note: Do not unpack the Motherboard from its protective anti-static packaging until you have made the following preparations.

2-1 Preparations

Gather and prepare all the following hardware equipment to complete the installation successfully:

1. Pentium processor with CPU cooling fan.
2. DIMM memory module
3. Computer case and chassis with adequate power supply unit
4. Monitor
5. Keyboard
6. Pointing Device (PS/2 mouse)
7. Speaker(s) (optional)
8. Disk Drives: HDD, CD-ROM, Floppy drive …
9. External Peripherals: Printer, Plotter, and Modem (optional)
10. Internal Peripherals: Modem and LAN cards (optional)

2-2 Unpacking the Motherboard

When unpacking the Motherboard, check for the following items:

- The **SY-5EMA Pro** ETEQ82C663 PCI/AGP Motherboard
- This *Quick Start Guide* *
- The Installation CD-ROM *
- One IDE Device ATA66 Flat Cable
- One Floppy Disk Drive Flat Cable

* If your board comes with a driver disc and a paper manual, the Quick Start Guide and the CD-ROM are not included in the package.

Warning: Do not unpack the Motherboard from its anti-static packaging until you are ready to install it.

Like most electronic equipment, your Motherboard may be damaged by electrostatic discharge. To avoid permanent damage to components ground yourself while working by using a grounding strap. Otherwise, ground yourself frequently by touching the unpainted portion of the computer chassis to drain the static charges.

Handle the Motherboard carefully, holding it by the edges.

You are now ready to start the installation.

2-3 Installation Guide

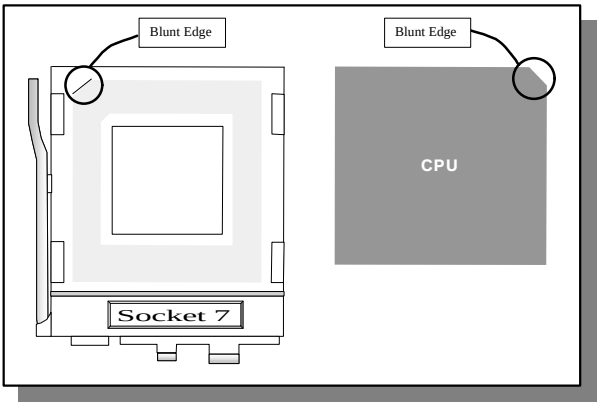
We will now begin the installation of the Motherboard. Please follow the step-by-step procedure designed to lead you to a complete and correct installation.

Step 1. CPU Installation

Follow these instructions to install your Pentium® class processor correctly.

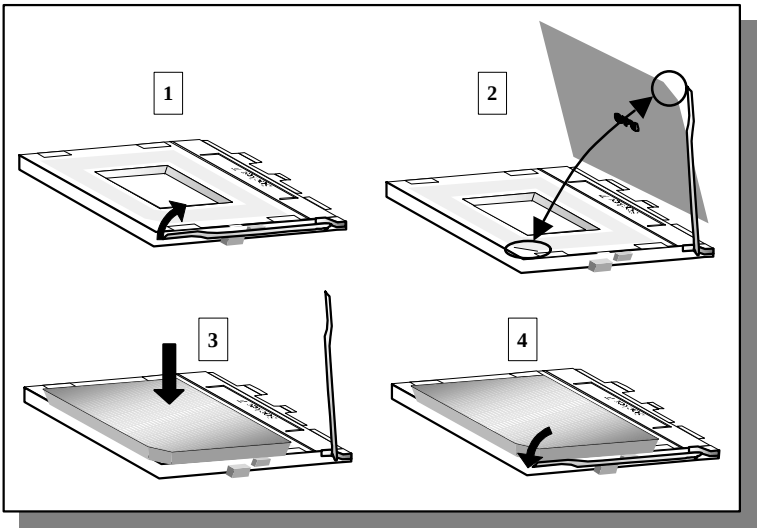
Locate the CPU socket labeled Socket 7 on your Motherboard and note the distinctive pinhole arrangement.

Note the corresponding pinhole arrangement on the processor.



Follow these steps to install the CPU in the Socket 7:

1. Lift the socket handle up to a vertical position.
2. Align the blunt edge of the CPU with the matching pinhole distinctive edge on the socket.
3. Seat the processor in the socket completely and without forcing.
4. Then close the socket handle to secure the CPU in place.

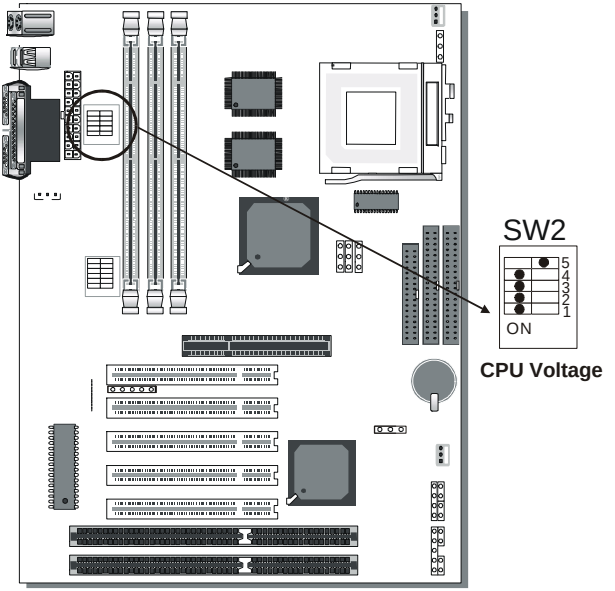


Step 2. CPU Fan Installation

Your Pentium® processor kit comes with a cooling fan. Mount the fan on the processor according to the instructions provided by the manufacturer. The fan is a key component that will ensure system stability. The fan prevents overheating, therefore prolonging the life of your CPU.

Note: Remember to connect the fan to the appropriate power source.

Step 3. CPU Voltage Setting (SW2)



Please verify the correct voltage with your dealer before installation. Use the following tables to set SW2 to the proper "Voltage Value", according to the specifications marked on your CPU: This Motherboard comes with pre-configured setting of CPU voltage. However the voltage of your CPU maybe different with the default setting.

- **CPU VOLTAGE SETTING (SW2)**

SW2 is used to set the CPU core voltage.

There are two kinds of CPU voltages currently on the market depending on the CPU manufacturer:

- Single Voltage (CPU: P54C, AMD-K5, Cyrix 6x86, IDT X86 CPU C6/W2,Rise mP6)
- Dual Voltage (CPU: P55C, AMD-K6, AMD-K6-2, AMD-K6-III, Cyrix 6x86L,Cyrix 6x86MX, Cyrix M II)

Those processors may come in various voltages on different markets. Therefore, always make sure you know the type of the

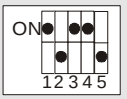
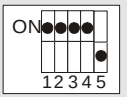
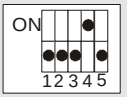
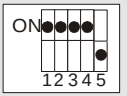
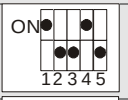
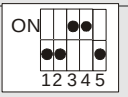
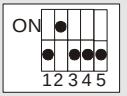
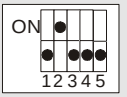
CPU you are installing and adjust the settings on SW2 accordingly.

This motherboard supports CPU core voltages from 2.0 to 3.5V in 0.1V increments. Use the following tables to set the CPU voltage jumpers SW2 to match the voltage value of your CPU:

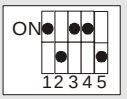
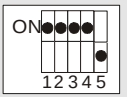
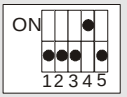
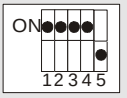
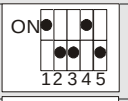
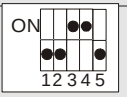
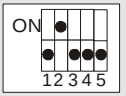
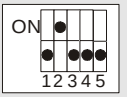
CPU Core Voltage Setting: SW2

Voltage Value	1	2	3	4	5
3.5V	on	on	on	on	**off**
3.4V	**off**	on	on	on	**off**
3.3V	on	**off**	on	on	**off**
3.2V	**off**	**off**	on	on	**off**
3.1V	on	on	**off**	on	**off**
3.0V	**off**	on	**off**	on	**off**
2.9V	on	**off**	**off**	on	**off**
2.8V	**off**	**off**	**off**	on	**off**
2.7V	on	on	on	**off**	**off**
2.6V	**off**	on	on	**off**	**off**
2.5V	on	**off**	on	**off**	**off**
2.4V	**off**	**off**	on	**off**	**off**
2.3V	on	on	**off**	**off**	**off**
2.2V	**off**	on	**off**	**off**	**off**
2.1V	on	**off**	**off**	**off**	**off**
2.0V	**off**	on	on	on	on

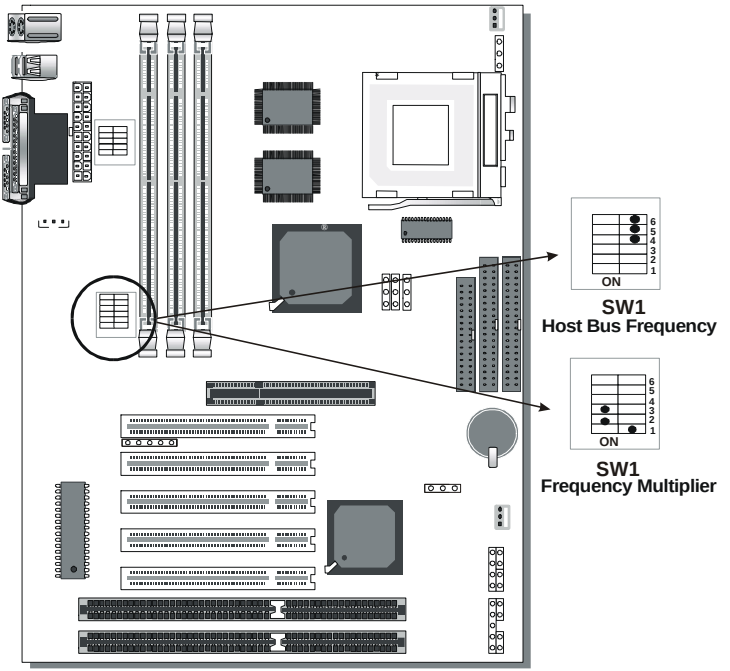
Voltage Settings for Various Processors

Processor Voltage Setting	**Voltage Value: SW2**
Intel P54C - P100 Intel P54C - P133	Single Voltage VORE:3.3V VI/O:3.3V 
Intel P54C - P166 Intel P54C - P200	Single Voltage VORE:3.5V VI/O:3.5V 
Intel P55C - P166 Intel P55C - P200 Intel P55C - P233	Dual Voltage VORE:2.8V VI/O:3.3V 
AMD K5 - PR100 AMD K5 - PR133 AMD K5 - PR166	Single Voltage VORE:3.5V VI/O:3.3V 
AMD K6 166 AMD K6 200	Dual Voltage VORE:2.9V VI/O:3.3V 
AMD K6 233	Dual Voltage VORE:3.2V VI/O:3.3V 
AMD K6 266 AMD K6 300 AMD K6-2 266 AMD K6-2 300 AMD K6-2 333 AMD K6-2 350 AMD K6-2 366 AMD K6-2 380 AMD K6-2 400 AMD K6-2+ 450 AMD K6-2 533	Dual Voltage VORE:2.2V VI/O:3.3V 
AMD K6-2 450 AMD K6-2 475 AMD K6-2 500 AMD K6-III 400 AMD K6-III 450	Dual Voltage VORE:2.2V VI/O:3.3V 

Voltage Settings for Various Processors (continued)

Processor Voltage Setting	**Voltage Value: SW2**
Intel P54C - P100 Intel P54C - P133	Single Voltage VORE:3.3V VI/O:3.3V 
Intel P54C - P166 Intel P54C - P200	Single Voltage VORE:3.5V VI/O:3.5V 
Intel P55C - P166 Intel P55C - P200 Intel P55C - P233	Dual Voltage VORE:2.8V VI/O:3.3V 
AMD K5 - PR100 AMD K5 - PR133 AMD K5 - PR166	Single Voltage VORE:3.5V VI/O:3.3V 
AMD K6 166 AMD K6 200	Dual Voltage VORE:2.9V VI/O:3.3V 
AMD K6 233	Dual Voltage VORE:3.2V VI/O:3.3V 
AMD K6 266 AMD K6 300 AMD K6-2 266 AMD K6-2 300 AMD K6-2 333 AMD K6-2 350 AMD K6-2 366 AMD K6-2 380 AMD K6-2 400 AMD K6-2+ 450 AMD K6-2 533	Dual Voltage VORE:2.2V VI/O:3.3V 
AMD K6-2 450 AMD K6-2 475 AMD K6-2 500 AMD K6-III 400 AMD K6-III 450	Dual Voltage VORE:2.2V VI/O:3.3V 

Step 4. CPU Frequency Setting (SW1)



The SY-5EMA Pro Motherboard is designed to support most Pentium® class processors currently on the market. Jumpers SW1 is used to configure the Motherboard frequency parameters to match the working frequency of your CPU.

- **CPU FREQUENCY SETTING (SW1)**

Configure the SW1 jumpers to the settings that match your CPU speed. Refer to the following tables to set the Frequency Multiplier and Host Bus Frequency of your CPU:

Frequency Multiplier

Multiplier	1	2	3
1.5/3.5x	off	off	off
2.0x*	**on**	off	off
2.5x	**on**	**on**	off
3.0x	off	**on**	off
4.0x	**on**	off	**on**
4.5x	**on**	**on**	**on**
5.0x	off	**on**	**on**
5.5x	off	off	**on**

Host Bus Frequency

Host Bus Frequency	4	5	6
66MHz	off	**on**	**on**
75MHz	off	off	**on**
83MHz	off	**on**	off
95MHz	**on**	off	off
97MHz	**on**	off	**on**
100MHz	off	off	off

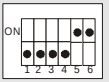
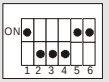
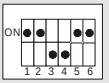
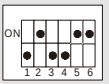
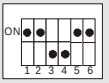
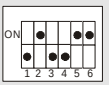
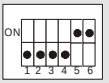
Example: If the working frequency of your CPU is 133MHz, then select Multiplier=2.0x and Host Bus Frequency=66Mhz accordingly.

Note: *The multiplier settings listed apply to all common CPUs. The IDT X86 CPU CPUs do not conform to the values listed here, refer to the detailed CPU list that follows for more information.*

Also, as newer and higher frequency CPUs may not be listed in this section, please refer to the tables ***CPU Frequency Settings for Various Processors*** on page 8 for complementary information.

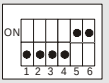
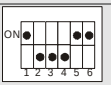
Please refer to the following table that gives you the correct frequency settings for the specific brand and model of CPU you are installing on this Motherboard.

Frequency Settings for Intel® Processors

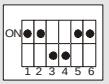
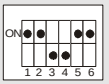
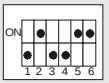
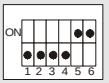
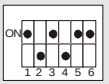
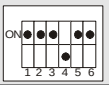
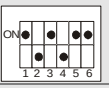
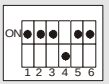
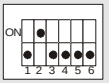
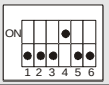
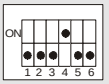
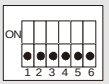
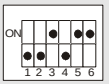
Processor Frequency Setting	Ratio	Bus Clock	AGP Clock	PCI Clock	Frequency Setting: SW1
Intel P54C - P100	1.5 x	66MHz	66MHz	33MHz	
Intel P54C - P133	2.0 x	66MHz	66MHz	33MHz	
Intel P54C - P166	2.5 x	66MHz	66MHz	33MHz	
Intel P54C - P200	3.0 x	66MHz	66MHz	33MHz	
Intel P55C - P166	2.5 x	66MHz	66MHz	33MHz	
Intel P55C - P200	3.0 x	66MHz	66MHz	33MHz	
Intel P55C - P233	3.5 x	66MHz	66MHz	33MHz	

* Set the proper CPU frequency according to the marking on the CPU.

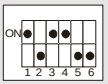
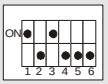
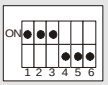
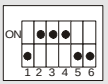
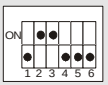
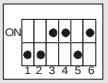
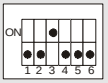
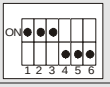
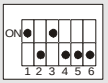
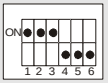
Frequency Settings for AMD ™Processors

Processor Frequency Setting	Ratio	Bus Clock	AGP Clock	PCI Clock	Frequency Setting: SW1
AMD K5 - PR100	1.5 x	66MHz	66MHz	33MHz	
AMD K5 - PR133	2.0 x	66MHz	66MHz	33MHz	

Frequency Settings for AMD ™Processors (Continued)

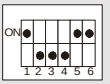
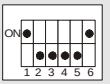
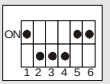
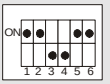
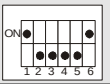
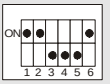
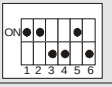
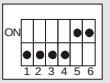
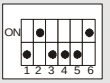
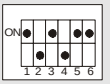
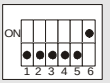
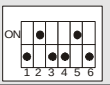
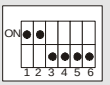
Processor Frequency Setting	Ratio	Bus Clock	AGP Clock	PCI Clock	Frequency Setting: SW1
AMD K5 - PR166	2.5 x	66MHz	66MHz	33MHz	
AMD K6 - 166	2.5 x	66MHz	66MHz	33MHz	
AMD K6 - 200	3.0 x	66MHz	66MHz	33MHz	
AMD K6 - 233	3.5 x	66MHz	66MHz	33MHz	
AMD K6 - 266	4.0 x	66MHz	66MHz	33MHz	
AMD K6 - 300	4.5 x	66MHz	66MHz	33MHz	
AMD K6-2 266	4.0 x	66MHz	66MHz	33MHz	
AMD K6-2 300	4.5 x	66MHz	66MHz	33MHz	
AMD K6-2 300	3.0 x	100MHz	66MHz	33MHz	
AMD K6-2 333	5.0 x	66MHz	66MHz	33MHz	
AMD K6-2 333	3.5 x	95MHz	63.4MHz	31.7MHz	
AMD K6-2 350	3.5 x	100MHz	66MHz	33MHz	
AMD K6-2 366	5.5 x	66MHz	66MHz	33MHz	

Frequency Settings for AMD ™Processors (Continued)

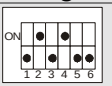
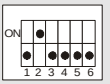
Processor Frequency Setting	Ratio	Bus Clock	AGP Clock	PCI Clock	Frequency Setting: SW1
AMD K6-2 380	4.0 x	95MHz	63.5MHz	31.75MHz	
AMD K6-2 400	4.0 x	100MHz	66MHz	33MHz	
AMD K6-2 450	4.5 x	100MHz	66MHz	33MHz	
AMD K6-2 475	5.0 x	95MHz	63.5MHz	31.75MHz	
AMD K6-2 500	5.0 x	100MHz	66MHz	33MHz	
AMD K6-2 533	5.5 x	97MHz	64.67MHz	32.33MHz	
AMD K6-2 550	5.5 x	100MHz	66MHz	33MHz	
AMD K6-2+ 450	4.5 x	100MHz	66MHz	33MHz	
AMD K6-III 400	4.0 x	100MHz	66MHz	33MHz	
AMD K6-III 450	4.5 x	100MHz	66MHz	33MHz	

* Set the proper CPU frequency according to the marking on the CPU.

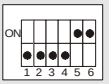
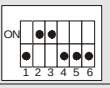
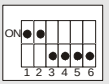
Frequency Settings for Cyrix ™Processors

Processor Frequency Setting	Ratio	Bus Clock	AGP Clock	PCI Clock	Frequency Setting: SW1
Cyrix 6x86 - PR166+	2.0 x	66MHz	66MHz	33MHz	
Cyrix 6x86 - PR200+	2.0 x	75MHz	75MHz	37.5MHz	
Cyrix MX - PR166**	2.0 x	66MHz	66MHz	33MHz	
Cyrix MX - PR200**	2.5 x	66MHz	66MHz	33MHz	
Cyrix MX - PR200**	2.0 x	75MHz	75MHz	37.5MHz	
Cyrix MX - PR233**	2.5 x	75MHz	75MHz	37.5MHz	
Cyrix MX - PR266**	2.5 x	83MHz	55MHz	27.5MHz	
Cyrix M II - 300**	3.5 x	66MHz	66MHz	33MHz	
Cyrix M II - 300**	3.0 x	75MHz	75MHz	37.5MHz	
Cyrix M II - 333**	4.0 x	66MHz	66MHz	33MHz	
Cyrix M II - 333**	3.5 x	75MHz	75MHz	37.5MHz	
Cyrix M II - 333**	3.0 x	83MHz	55MHz	27.5MHz	
Cyrix M II - 366**	2.5 x	100MHz	66MHz	33MHz	

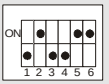
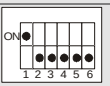
Frequency Settings for Cyrix ™Processors (Continued)

Processor Frequency Setting	Ratio	Bus Clock	AGP Clock	PCI Clock	Frequency Setting: SW1
Cyrix M II – 400**	3.0 x	95MHz	63.5MHz	31.75MHz	
Cyrix M II - 433**	3.0 x	100MHz	66MHz	33MHz	

Frequency Settings for IDT ™Processors

Processor Frequency Setting	Ratio	Bus Clock	AGP Clock	PCI Clock	Frequency Setting: SW1
IDT X86 CPU 2-233	3.5 x	66MHz	66MHz	33MHz	
IDT X86 CPU 2-266	2.33 x	100MHz	66MHz	33MHz	
IDT X86 CPU 2-300	2.5 x	100MHz	66MHz	33MHz	

Frequency Settings for Rise ™Processors

Processor Frequency Setting	Ratio	Bus Clock	AGP Clock	PCI Clock	Frequency Setting: SW1
Rise mP6 PR266	3.0 x	66MHz	66MHz	33MHz	
	2.0 x	100MHz	66MHz	33MHz	

Step 5. Set JP8,JP9,JP10 for SDRAM frequency

JP8 is used to indicate the frequency of the CPU bus clock to the ETEQ chipset.

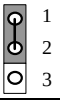
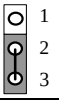
JP9 and JP10 are used to determine that the SDRAM is running at the frequency of the CPU bus clock or the AGP clock.

CPU BUS Clock	AGP BUS Clock	JP10	JP8	JP9	SDRAM Clock
66MHz	66MHz	1-2	2-3	2-3	66MHz
75MHz	75MHz	1-2	2-3	2-3	75MHz
83MHz	55MHz	2-3	1-2	1-2	55MHz
		1-2	1-2	2-3	83MHz
95MHz	63.4MHz	2-3	1-2	1-2	63.4MHz
		1-2	1-2	2-3	95MHz
97MHz	63.4MHz	2-3	1-2	1-2	63.4MHz
		1-2	1-2	2-3	95MHz
100MHz	66MHz	2-3	1-2	1-2	66MHz
		1-2	1-2	2-3	100MHz

Note: Use 8ns or faster SDRAM modules (PC100 compliant) when SDRAM is set to run at the frequency of 95/100 MHz.

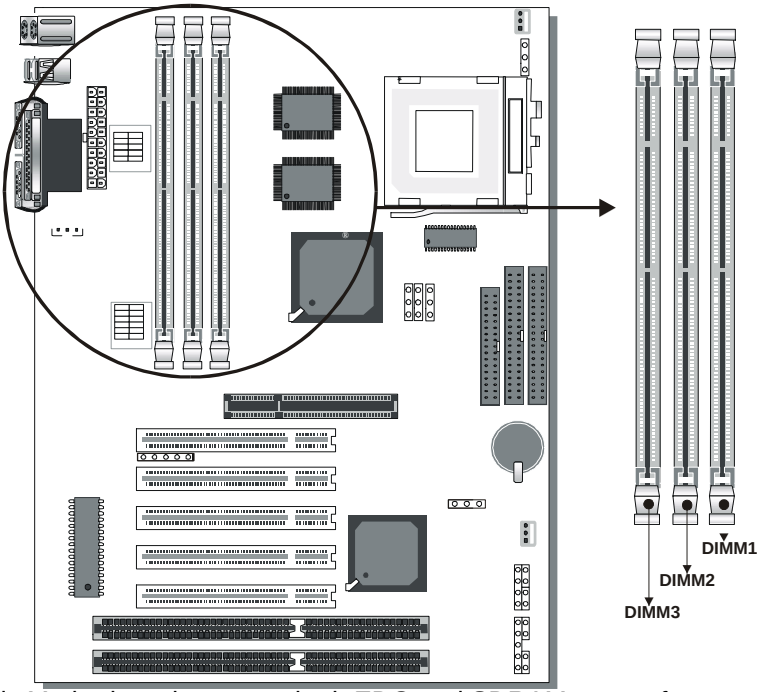
Step 6. *CPU frequency of 83MHz Setting (JP11)*

This jumper is used in the CPU frequency selection. It is set to 1-2 for a CPU frequency of 83 MHz. For all other CPU frequencies it has to be set to 2-3.

CPU frequency	83MHz	All other CPU Frequencies
JP11 Setting	Close pin1-2 	Close pin2-3 

Step 7. DRAM Module Installation

This Motherboard supports three DIMM banks from 8 to 256 MB with no other restrictions on memory configurations. You can install the memory in any combination without having to rely on a memory configuration table. Memory configuration is therefore "table-free" in any memory bank.



This Motherboard supports both EDO and SDRAM types of memory modules.

- **MEMORY CONFIGURATION**

This Motherboard features 3 x DIMM Banks for 168-pin 3.3V unbuffered DIMM modules

Your board comes with three DIMM sockets, providing support for up to 768MB of main memory using DIMM modules from 8MB to 256MB. For 66MHz host bus CPUs use 12ns or faster DIMM modules; for 83MHz or faster host bus CPUs use 8ns modules.

Memory configuration Table

MEMORY CONFIGURATION	DIMM Banks		
	DIMM 1	DIMM 2	DIMM 3
RAM Type	EDO/SDRAM	EDO/SDRAM	EDO/SDRAM
Single RAM Module Size (MB)	8/16/32/64/128/256	8/16/32/64/128/256	8/16/32/64/128/256

Step 8. IDE Device Installation (HDD, CD-ROM)

This Motherboard offers two primary and secondary IDE device connectors (IDE1, IDE2.) It can support up to four high-speed HDD or CD-ROM.

Connect one side of the 40-pin flat cable to the IDE device (HDD or CD-ROM) and plug the other end to the primary (IDE1) or secondary (IDE2) directionally keyed IDE connector on the Motherboard.

This Motherboard can support up to four HDDs.

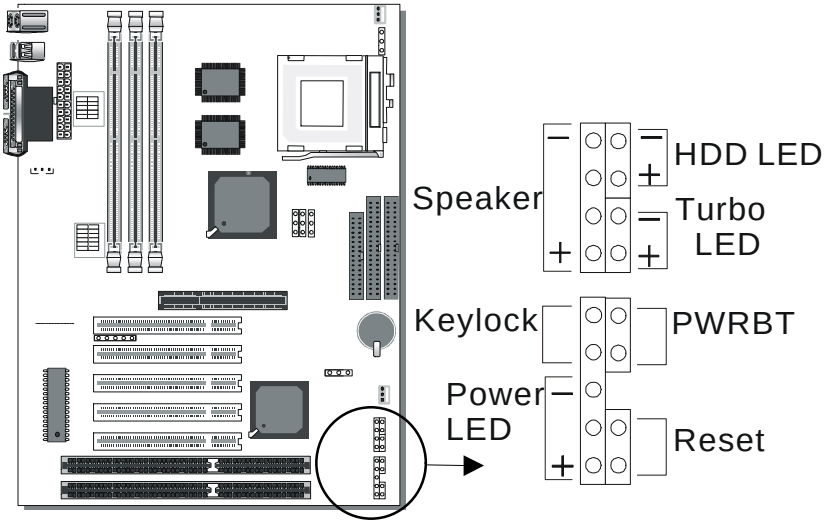
Step 9. Floppy Drive Installation

The system supports 5 possible floppy drive types: 720 KB, 1.2 MB, 1.44 MB, 2.88 MB, and LS-120. In addition, this Motherboard supports a 3-mode (720KB/1.25MB/1.44MB) floppy commonly used in Japan.

Connect one side of the 34-pin flat cable to the floppy drive and plug the other end to the floppy drive connector on the Motherboard.

This Motherboard can support up to 2 floppy drives.

Step 10. Front Panel Connections



Plug the computer case's front panel devices to the corresponding connectors on the Motherboard.

1. Power LED & KeyLock

Plug the Power LED cable into the 5-pin Keylock connector.
Some systems may feature a KeyLock function with a front panel switch for enabling or disabling the keyboard. Connect the KeyLock switch to the 5-pin Keylock connector on the Motherboard.
Please install according to the following pin assignment: pin 1,3 are for Power LED and pin 4,5 are for Keylock.

2. Reset

Plug the Reset push-button cable into the 2-pin Reset connector on the Motherboard. Pushing the Reset button on the front panel will cause the system to restart the boot-up sequence.

3. Speaker

Attach the 4-pin PC speaker cable from the case to the Speaker connector on the Motherboard.

4. Turbo LED

Connecting the 2-pin Turbo LED cable to the corresponding Turbo LED connector will cause the LED to light whenever the system is in Turbo mode.

The manufacturer has permanently set this Motherboard in Turbo mode due to most hardware and software compliance to turbo mode.

5. IDE LED

Attach the 2-pin IDE device LED cable to the corresponding IDE LED connector on the Motherboard. This will cause the LED to lighten when an IDE (HDD, CD-ROM) device is active.

6. ATX Power On/Off Switch

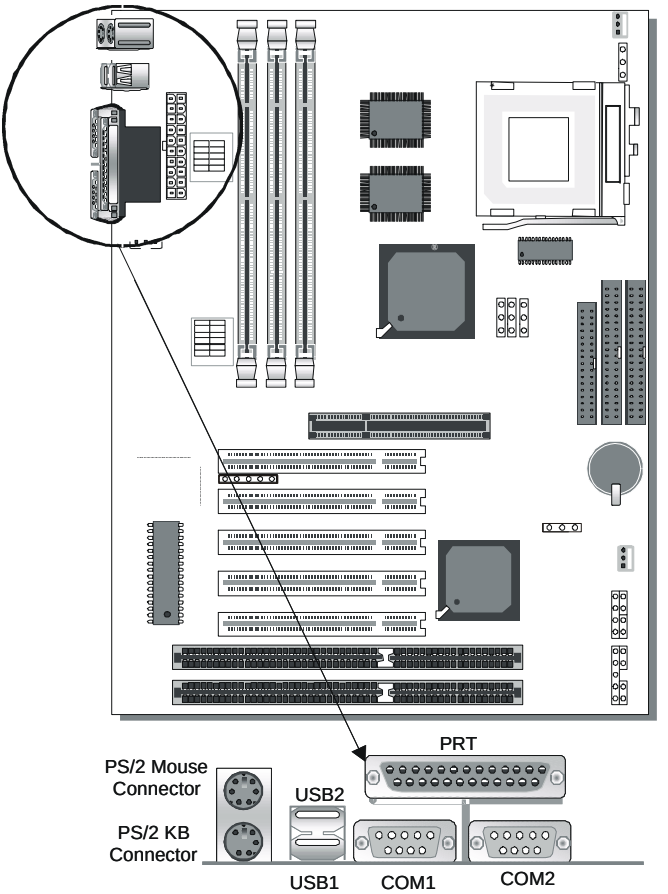
Attach the 2-pin momentary type switch to the PWRBT connector for turning On or Off your ATX power supply.

Step 11. Back Panel Connections

All external devices such as the keyboard, printer, PS/2 mouse, modem, USB, can be plugged directly onto the Motherboard back panel.

Only after you have fixed and locked the Motherboard to the computer case can you start connecting the external peripheral devices.

When connecting an external device, use the following figure to locate and identify which back panel connector to plug the device to.



1. Onboard Serial Port COM1,COM2

External peripherals that use serial transmission scheme include:

- serial mouse,
- and modem.

Plug the serial device cables directly into the COM1or COM2 9-pin male connector located at the rear panel of the Motherboard.

2. Parallel Port PRT

This parallel port is used to connect the printer or other parallel devices.

Plug the parallel device cable into the 25-pin female connector located at the rear panel of the Motherboard.

3. PS/2 Keyboard

Plug the keyboard jack directly into the 6-pin female PS/2 keyboard connector located at the rear panel of the Motherboard.

4. PS/2 Mouse

Similarly, plug the mouse jack directly into the 6-pin female PS/2 mouse connector.

5. Universal Serial Bus USB1/USB2

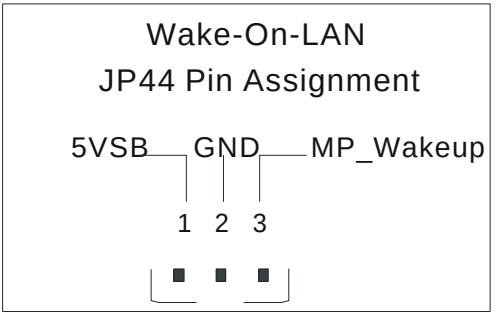
This Motherboard provides two USB ports for your additional devices. Plug the USB device jack into the available USB connector USB1 or USB2.

- USB devices under Win98 are allowed.
- With Win95, use the flow HCI V1.1 specifications.

1. Wake-On-LAN (WOL)

Attach the 3-pin connector from the LAN card which supports the Wake-On-LAN (WOL) function to the JP44 connector on the Motherboard. This WOL function lets users wake up the connected computer through the LAN card.

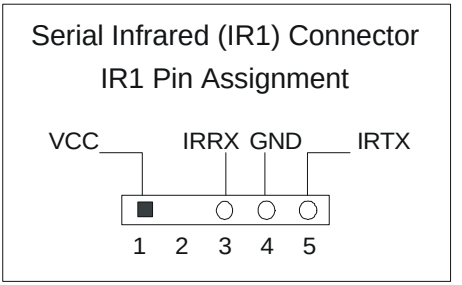
Please install according to the following pin assignment:



2. Infrared (IR)

Plug the 5-pin infrared device cable to the IR connector. This will enable the infrared transfer function. This Motherboard meets both the ASKIR and HPSIR specifications.

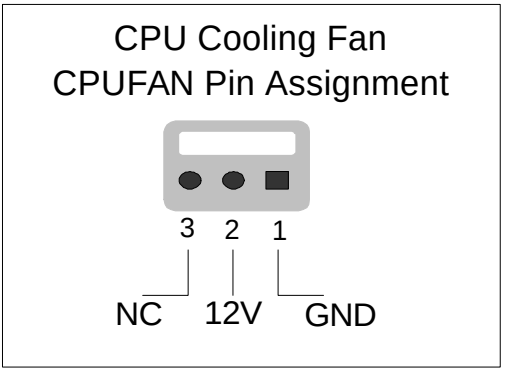
Please install according to the following pin assignment:



Step 12. CPU Cooling Fan Installation

After you have seated the CPU cooling fan properly on the processor, attach the 3-pin fan cable to the CPUFAN connector on the Motherboard.

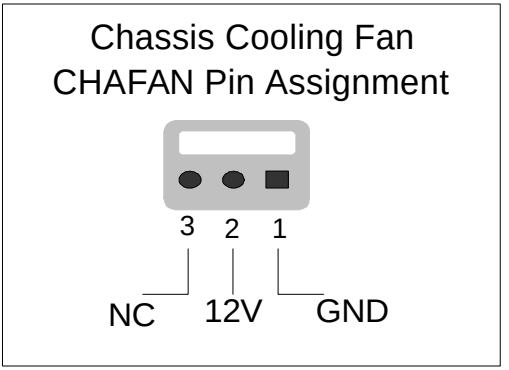
To avoid damage to the system, install according to the following pin assignment:



Step 13. Chassis Cooling Fan Installation

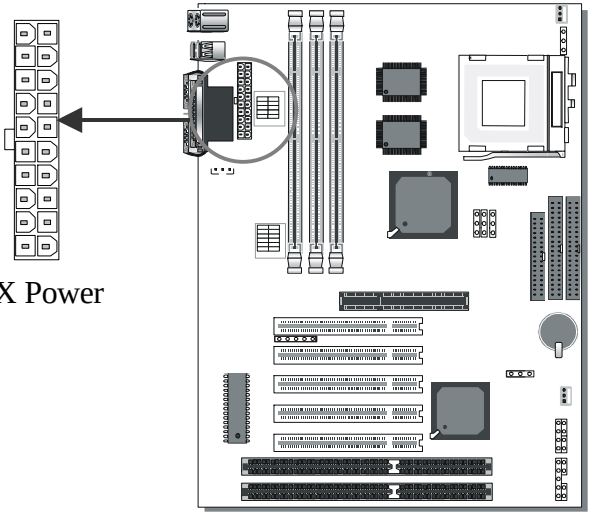
After you have seated the Chassis cooling fan properly on the processor, attach the 3-pin fan cable to the CHAFAN connector on the Motherboard.

To avoid damage to the system, install according to the following pin assignment:



Step 14. ATX Power Supply

Plug the connector from the power directly into the 20-pin male ATX PW connector on the Motherboard, as shown in the following figure.



Warning: Follow these precautions to preserve your Motherboard from any remnant currents when connecting to ATX power supply:

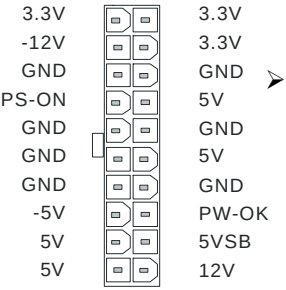
Turn off the power supply and unplug the power cord of the ATX power supply before connecting to ATX PW connector.

The Motherboard requires a power supply with at least 200 Watts and a "power good" signal. Make sure the ATX power supply can take at least 10 mA * load on the 5V Standby lead (5VSB) to meet the standard ATX specification.

**** Note:*** If you use the Wake-On-LAN (WOL) function, make sure the ATX power supply can support at least 720 mA on the 5V Standby lead (5VSB).

Please install the ATX power according to the following pin assignment:

ATX Power



➢ **Pay special care to the directionality.**

Clear CMOS

In some cases the CMOS memory may contain wrong data, follow the steps below to clear CMOS memory.

1. Clear the CMOS memory by momentarily shorting pin 2-3 on jumper JP5. This jumper can be easily identified by its white colored cap.
2. Then put the jumper back to 1-2 to allow writing new of data into the CMOS memory.

CMOS Clearing	Clear CMOS Data	Retain CMOS Data
JP5 Setting	short pin 2-3 to clear the CMOS 	Short pin 1-2 to retain new settings 
Note: You must unplug the ATX power cable from the ATX power connector when performing the CMOS Clear operation.		

Step 15. MULTI I/O ADDRESSES

Default settings for multi-I/O addresses are as follows:

Port	I/O Address	IRQ	Status
LPT1	378H	7	ECP + EPP
COM1	3F8H	4	
COM2	2F8H	3	

Warning: If a default I/O address conflicts with other I/O cards such as sound card, you must change one of the I/O addresses to remedy to this address conflict. (I/O addresses can be adjusted from the BIOS Setup Utility)

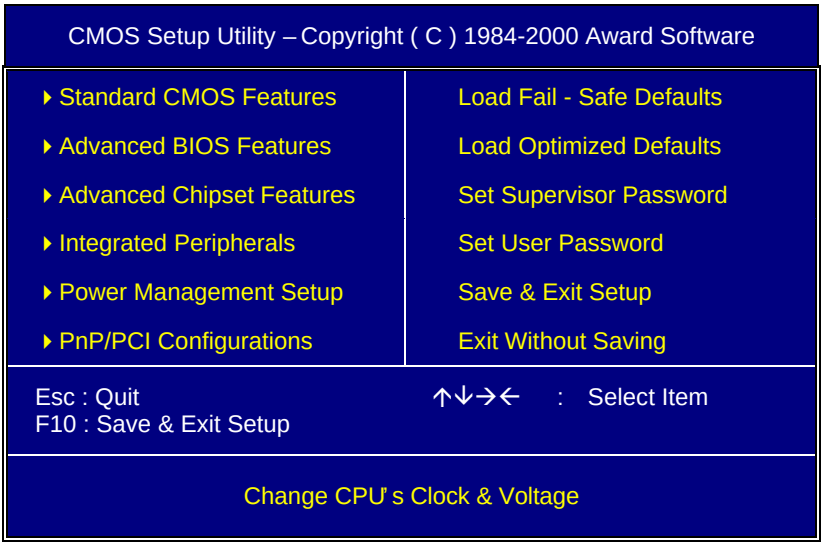
Step 16. Power On

You have now completed the hardware installation of your Motherboard successfully.

1. Turn the power on
2. To enter the BIOS Setup Utility, press the <DEL> key while the system is performing the diagnostic checks,

Note: If you have failed to enter the BIOS, wait until the boot up sequence is completed. Then push the RESET button and press <DEL> key again at the beginning of boot-up, during diagnostic checks.

Repeat this operation until you get the following screen.



3. The BIOS Setup screen appears:

You are now ready to configure your system with the BIOS setup program. Go to Chapter 3: **BIOS SETUP**

Troubleshooting at First Start

Video (no display) related issues

I built a new computer system using a Soyo board and nothing happens when turning it on, no video and no beeps from the PC speaker. What is happening and how can it be fixed?

No screen and no beeps mean that your CPU and motherboard do not work at all. It could be that the CPU is not seated correctly or that a component on the M/B is grounded (shorted) with the case. Also make sure to check the voltage setting switch (110V/220V) on the back of the power supply. To isolate the problem do the following:

1. Press and hold down on the “Ins” (insert) key while turning on the computer until you get video. If you do not get video then,

2. Double-check jumpers setting on you motherboard and remove all add-on cards, unplug all hard-disk and floppy-disk drive cables and see if you can hear some beeps. If you still do not get any beeps, then try putting the motherboard on the table (to isolate it from the case) with the CPU and speaker only, and give it one more try.

I hear a series of beeps and I do not get anything from my monitor. What could be wrong?

The following lists some basic beep codes and their possible meanings:

- One long beep and 3 very short beeps - The video card is not detected by the motherboard. Please re-seat your video card. If you are using an AGP card, please push your AGP card down real hard. You may have to push VERY hard without the AGP card mounting screw. Make sure not to insert the card the other way around.

- Continuous beeps – One or more of the memory modules is not seated correctly in its socket.

My PCI VGA card works fine with my system, but when I put in a new AGP card, it does not give me any video. Is my AGP slot bad?

This is a common problem with AGP video cards. The reason is that your AGP card did not get seated into the AGP slot fully and firmly. Please push your AGP card down into the socket real hard, it should snap twice. You may have to unscrew the AGP card to allow the card to go further down. Do take care not to damage the card by using too much force.

I get distorted video my AGP card right after I save my bios. Why is that?

The cause is likely that your AGP card is not running at the correct bus speed. To fix this, please clear the CMOS via JP5 and if it still does not work, please upgrade your motherboard bios to the latest version.

BIOS Issues

Where can I find the BIOS revision of my mainboard?

It will be displayed on the up-left corner on the screen during boot-up. It will show as your board type followed by the revision number, such as 5EH_2CA1 (meaning revision 2CA1 for the SY-5EH board) or 6BA+ IV_2AA2 which means SY-6BA+ IV motherboard with 2AA2 bios.

Where can I find the latest BIOS of my motherboard?

Please go to the technical support page of one of the SOYO websites (Taiwan: www.soyo.com.tw), and look up your motherboard to find the latest BIOS revision.

Hard disk, floppy drive, CD-ROM etc

When I boot up my new computer I got "floppy boot failure" and the LED on the floppy stays on

Make sure the red wire of floppy ribbon cable goes to Pin1 on the floppy drive side (don't trust the "key lock" or "notch") and use the end-connector of the cable (don't use middle one).

Modem issues

I get an "I/O Conflict" message when I turn on my system and I can not get my modem to work

What you need to do is to disable 'COM2' (or UART2 or serial port 2) in the bios under integrated peripheral setup.

I have installed my modem drivers several times and I still cannot get my modem to work. Why?

If you are sure that the modem driver has been installed correctly, then you need to install the south bridge driver from the SOYO CD, this is because Windows does not properly recognize relatively new chipsets.

Audio Issues

I do not get any sound from my sound card. What could be wrong?

Please make sure the speaker is connected to the speaker out port on your sound card.

In Device Manager, I keep getting yellow exclamation signs on my sound port even though I have installed my sound driver several times and I could not get my sound card to work. What is wrong?
It is likely that you did not have the correct driver installed. If you are sure that the correct sound driver has been installed, then please install the 'south bridge' driver for the motherboard.

The sound is working in my system, but when I play CD music from the CD-ROM, I do not get any sound. What is wrong?
This is because the 3-wire audio cable from the CD-ROM to the sound card is not connected or it is loose.

The sound from my sound card is distorted when Windows starts. What is wrong?
First, if you are using an ISA sound card, please make sure the IRQ needed for the sound card is set to 'Legacy ISA' in the bios. In other words, if your ISA sound card takes IRQ5, then set IRQ5 to 'Legacy ISA'. Next, install the 'south bridge' driver for the motherboard.

The sound and everything else works fine except that the recorder and microphone do not work. What is wrong?
This is because the recorder and microphone in the Windows are not enabled. Please go to sound properties and enable them.

Lock up (freeze)

When I boot up my system, everything works fine. It sees my CPU and memory, detects my hard drive, floppy drive and CD-ROM but locks up at "Verify DMI pool data... ", and it won't go any further. What should I do?
Please clear the CMOS via JP5 then choose 'load setup default' in the bios and save the bios and exit. Next, unplug all other add-on cards except the video card and floppy drive controller, and see if it can boot from floppy. Then put back the peripherals one by one to identify which one causes the lockup. If you are running a Cyrix CPU,

make sure the 'linear burst function' is enabled in the bios.

I can not get my board to run properly.

Please make sure you have the latest bios and driver from the SOYO web site at: http://www.soyo.com

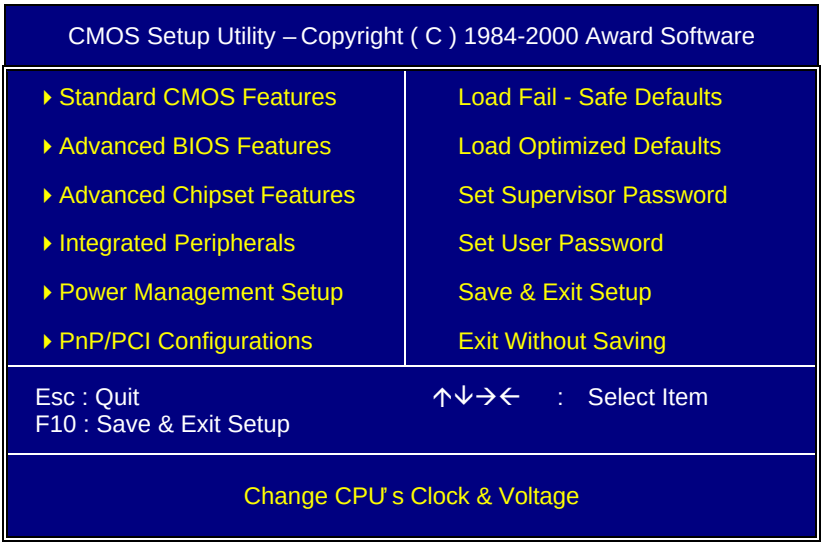
Chapter 3

BIOS SETUP UTILITY

This Motherboard's BIOS setup program uses the ROM PCI/ISA BIOS program from Award Software Inc.

To enter the Award BIOS program's Main Menu:

1. Turn on or reboot the system.
2. After the diagnostic checks, press the [Del] key to enter the Award BIOS Setup Utility.



Selecting items

- Use the arrow keys to move between items and select fields.
- From the Main Menu press arrow keys to enter the selected submenu.

Modifying selected items

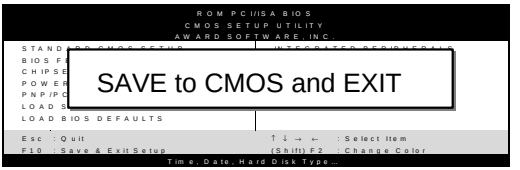
- Use the [Up]/[Down] keys to modify values within the selected fields. Some fields let you enter values directly.

Hot Keys: Function keys give you access to a group of commands throughout the BIOS utility.

Function	Command	Description
F1	General Help	Gives the list of options available for each item.
F5	Previous Values	Restore the old values. These are the values that the user started the current session with.
F6	Load Fail-Safe Defaults	Loads all items with the most conservative values.
F7	Load Optimized Defaults	Loads all options with the optimize values.
F10	Save	Saves your changes and reboots the system.
[Esc]	Exit	Returns at anytime and from any location to the Main Menu.
[Enter]	Select	Will display a overlapping window with all options for the current item.
[+/–/PU/PD]	Value	Using the +, –, Page Up and Page Down keys the user can toggle the value of the current item.

SAVE AND EXIT SETUP

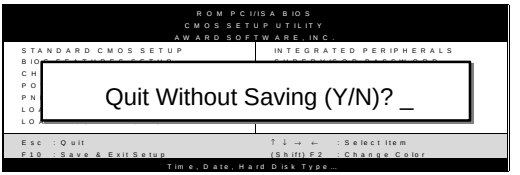
Select the [SAVE & EXIT SETUP] option from the Main Menu to save data to CMOS and exit the setup utility. This option saves all your changes and causes the system to reboot.



Type [Y] to save the changes and exit or [N] to return to the Main Menu and keep current values.

EXIT WITHOUT SAVING

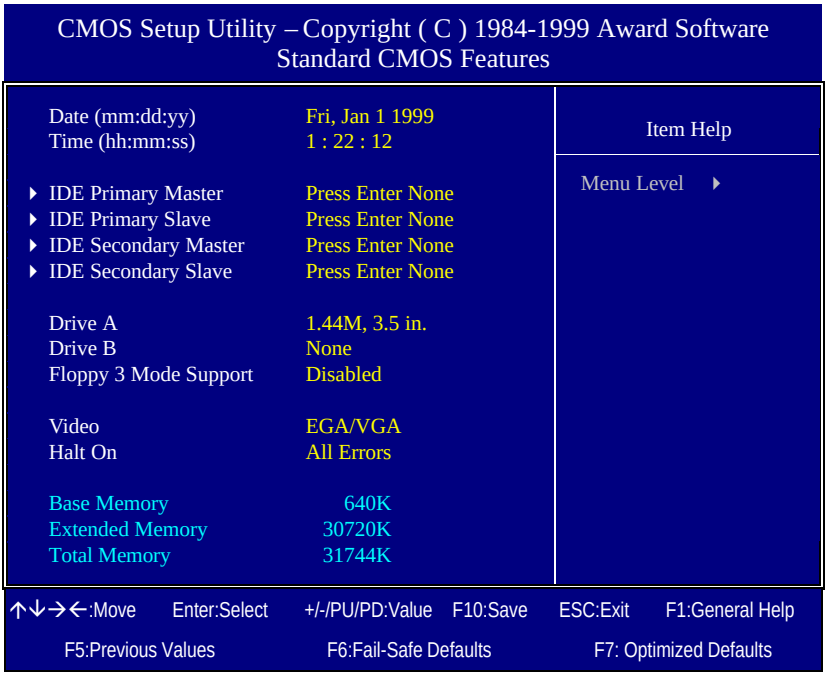
Selecting the [EXIT WITHOUT SAVING] option allows you to abandon all data and exit setup, therefore ignoring all your changes.



Type [Y] to abandon changes and exit or [N] to return to the Main Menu and keep current values.

3-1 STANDARD CMOS SETUP

Select the [STANDARD CMOS SETUP] option from the Main Menu and press [Enter] key.



This screen allows you to modify the basic CMOS settings.

After you have completed the changes, press [Esc] key to return to the Main Menu.

3-1.1 Date & Time

	Display	Setting	Please Note
Date	mm/dd/yyyy	Type the current date	You can also the PUp/PDn keys to toggle
Time	hh:mm:ss	Type the current time	24-hour clock format 3:15 PM is displayed as 15:15:00

3-1.2 Hard Disks Type & Mode

Choose the type and mode for the hard disks that you have already installed.

Primary (Secondary) Master & Slave	Setting	Description	Note
IDE HDD Auto-Detection	Press Enter	To auto-detect the HDD's size, head …on this channel	
IDE Primary Slave (User Type)	Auto	BIOS detects hard disk type automatically.	Default
	User	User defines the type of hard disk.	
	None		
Access Mode	Auto	BIOS detects hard disk mode automatically.	Default
	Normal	Normal IDE hard disk	<528MB
	LBA	Enhanced IDE hard disk	>528MB
	Large	Large IDE hard disk (for certain hard disk)	

Note: If you have any questions on your hard disk type or mode, ask your hard disk provider or previous user for details.

3-1.3 Floppy Drives

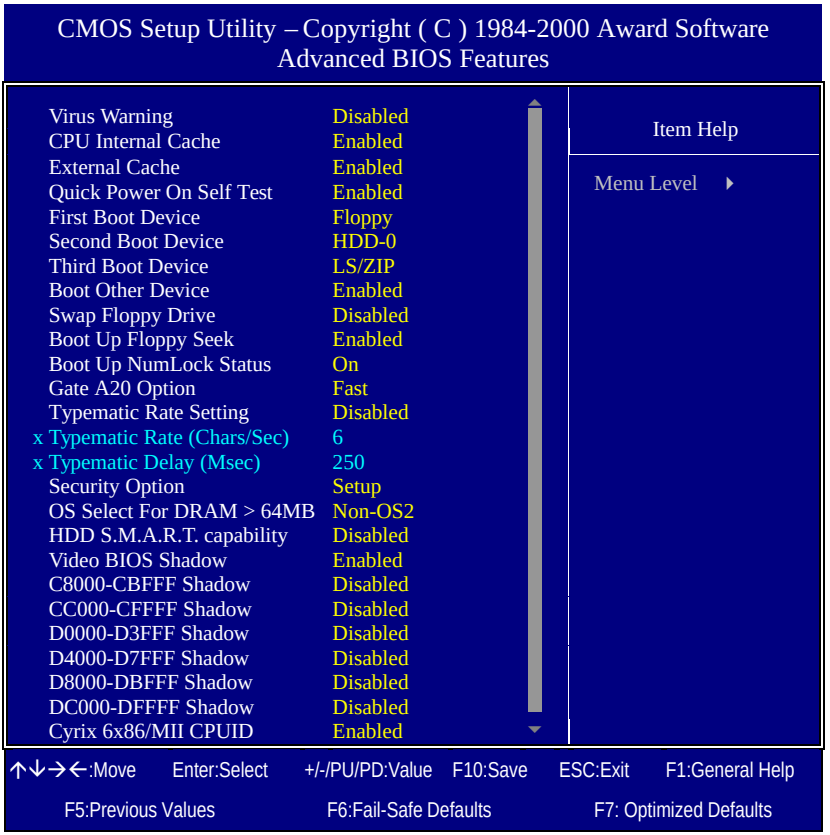
Floppy Drives	Setting	Description	Note
Drives A & B	360KB, 5.25 in.		
	1.2MB, 5.25 in.		
	720KB, 3.5 in.		
	1.44MB, 3.5 in.		Default
	2.88MB, 3.5 in.		
	None	Not installed	
Floppy 3-Mode Support	Disabled		Default
	Drive A Drive B Both	Supports 3-mode floppy diskette: 740KB/1.2MB/ 1.44MB on selected disk drive.	Special disk drive commonly used in Japan

3-1.4 Others Optional

	Setting	Description	Note
Video	EGA/VGA	Select the video mode.	Default
	CGA 40		
	CGA 80		
	MONO (Monochrome)		
Halt On	ALL Errors	When the BIOS detects system errors, this function will stop the system. Select which type of error will cause the system halt.	Default
	No Errors		
	All, But Keyboard		
	All, But Diskette		
	All, But Disk/Key		

3-2 Advanced BIOS FEATURES

Select the [Advanced BIOS Features] option from the Main Menu and press [Enter] key.



After you have completed the changes, press [Esc] key and follow the instructions on your screen to save your settings or exit without saving.

3-2.1 Virus Warning

	Setting	Description	Note
Virus Warning	Disabled	If set to enabled, the Paragon Anti-Virus. Function will scan your boot drive for boot virusses. If a boot virus is detected, the BIOS will display a warning message.	Default
	Enabled		

3-2.2 Cache Memory Options

	Setting	Description	Note
CPU Internal Cache	Disabled		
	Enabled	Enables the CPU's internal cache.	Default
External Cache	Disabled		
	Enabled	Enables the external memory.	Default

3-2.3 Quick Power On Self Test

	Setting	Description	Note
Quick Power On Self Test	Disabled		
	Enabled	Provides a fast POTS at boot-up.	Default

3-2.4 System Boot Control Settings

System Boot Control Settings	Setting	Description	Note
First /Second/Third Boot Device	Floppy	Select Your Boot Device Priority	
	LS/ZIP		
	HDD-0		
	SCSI		
	CDROM		
	HDD-1		
	HDD-2		
	HDD-3		
	LAN		
	Disabled		
Boot Other Device	Disabled	Select Your Boot Device Priority	
	Enabled		Default

3-2.5 Floppy Driver Settings

	Setting	Description	Note
Swap Floppy Drive	Disabled		Default
	Enabled	Changes the sequence of A and B drives.	

3-2.6 Boot Up Floppy Seek

	Setting	Description	Note
Boot Up Floppy Seek	Disabled	Seeks disk drives during boot up. Disabling speeds boot up.	Default
	Enabled		

3-2.7 Boot Up NumLock Status

	Setting	Description	Note
Boot Up NumLock Status	On	Puts numeric keypad in NumLock mode at boot-up.	Default
	Off	Puts numeric keypad in arrow key mode at boot-up.	

3-2.8 Gate A20 Options

	Setting	Description	Note
Gate A20 Options	Normal	Lets chipset control GateA20.	
	Fast	A pin in the keyboard controller controls GateA20.	Default

3-2.9 Typematic Settings

Typematic Settings	Setting	Description	Note
Typematic Rate Setting	Disabled	Keystrokes repeat at a rate determined by the keyboard.	Default
	Enabled	When enables, the typematic rate and typematic delay can be selected.	
The following [Typematic Rate] and [Typematic Delay] fields are active only if [Typematic Rate Setting] is set to [Enabled]			
Typematic Rate	6 (Char/sec) 8 (Char/sec) 10 (Char/sec) 12 (Char/sec) 15 (Char/sec) 20 (Char/sec) 24 (Char/sec) 30 (Char/sec)	Choose the rate at which a character is repeated when holding down a key.	Default
Typematic Delay	250 (msec) 500 (msec) 750 (msec) 1000 (msec)	Choose how long after you press a key down the character begins repeating.	Default

3-2.10Security Option

Use this feature to prevent unauthorized system boot-up or use of BIOS Setup. The following table describes the security settings.

	Setting	Description
Security Option	System	Each time the system is booted, the password prompt appears.
	Setup	If a password is set, the password prompt only appears when you attempt to enter the BIOS Setup program.

3-2.11Other Control Options

Other Control Options	Setting	Description	Note
OS Select for DRAM>64MB	OS2	When using an OS2 operating system.	
	Non-OS2	When using another, non-OS2 operating system.	Default
HDD S.M.A.R.T. capability	Disabled		Default
	Enabled	Enable this field when your HDD supports the S.M.A.R.T. function. Consult your HDD provider for details.	
Video BIOS Shadow	Disabled		
	Enabled	The BIOS is shadowed in a 16K segment if it is enabled and if it has BIOS present. These 16 segments can be shadowed from ROM to RAM. BIOS shadow copies BIOS code from slower ROM to faster RAM. BIOS can then execute from RAM.	Default
Cyrix 6x86/MII CPUID	Disabled	If you do not want application software to make use of the to CPU ID number, set it item to *Disabled*.	
	Enabled		Default

3-3 Advanced Chipset FEATURES

Caution: Change these settings only if you are already familiar with the Chipset.

The [Advanced Chipset Features] option changes the values of the chipset registers. These registers control the system options in the computer.

CMOS Setup Utility – Copyright (C) 1984-2000 Award Software
Advanced Chipset Features

Bank 0/1 DRAM Timing	SDRAM 10ns
Bank 2/3 DRAM Timing	SDRAM 10ns
Bank 4/5 DRAM Timing	SDRAM 10ns
SDRAM Cycle Length	3
DRAM Read Pipeline	Enabled
Cache Rd+CPU Wt Pipeline	Enabled
Cache Timing	Fast
Video BIOS Cacheable	Enabled
System BIOS Cacheable	Enabled
Memory Hole At 15Mb Addr.	Disabled
AGP Aperture Size	64M
OnChip USB	Enabled
USB Keyboard Support	Disabled
CPU to PCI Write Buffer	Enabled
PCI Dynmic Bursting	Enabled
PCI Master 0 WS Write	Enabled
PCI Delay Transaction	Disabled
PCI#2 Access #1 Retry	Disabled
AGP Master 1 WS Write	Enabled
AGP Master 1 WS Read	Disabled
Memory Parity/ECC Check	Enabled

Item Help

Menu Level ▸

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7: Optimized Defaults

After you have completed the changes, press [Esc] and follow the instructions on your screen to save your settings or exit without saving. The following table describes each field in the Advanced Chipset Features Menu and how to configure each parameter.

3-3.1 CHIPSET FEATURES SETUP

CHIPSET FEATURES	Setting	Description	Note
Bank 0/1, 2/3, 4/5 DRAM Timing	SDRAM 10ns	This item allows you to select the value in this field, depending on whether the board has paged DRAMs or EDO (extended data output) DRAMs.	Default
	SDRAM 8ns Normal Medium Fast Turbo		
SDRAM Cycle Length	2 3	When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer.	Default
DRAM Read Pipeline	Disabled		
	Enabled	Enhances system performance	Default
Cache Rd+CPU Wt Pipeline	Disabled		
	Enabled	Enhances system performance	Default
Cache Timing	Fast	Enhances system performance	Default
	Fastest		
Video BIOS Cacheable	Disabled	When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer.	Default
	Enabled		
System BIOS Cacheable	Disabled		
	Enabled	The ROM area F0000H-FFFFFH is cacheable.	Default

CHIPSET FEATURES SETUP (Continued)

CHIPSET FEATURES	Setting	Description	Note
Memory Hole 15Mb Addr.	Disabled	Some interface cards will map their ROM address to this area.	Default
	Enabled		
AGP Aperture Size	64M 4M, 8M, 16M, 32M, 128M, 256M.	Select the size of Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.	Default
OnChip USB	Disabled	This should be enabled if your system has a USB installed on the system board and you want to use it. Even when so equipped, if you add a higher performance controller, you will need to disable this feature.	
	Enabled		Default
USB Keyboard Support	Disabled		
	Enabled	Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.	Default
CPU to PCI Write Buffer	Disabled	When this field is *Enabled*, writes from the CPU to the PCI bus are buffered, to compensate for the speed differences between the CPU and the PCI bus. When *Disabled*, the writes are not buffered and the CPU must wait until the write is complete before starting another write cycle.	
	Enabled		Default

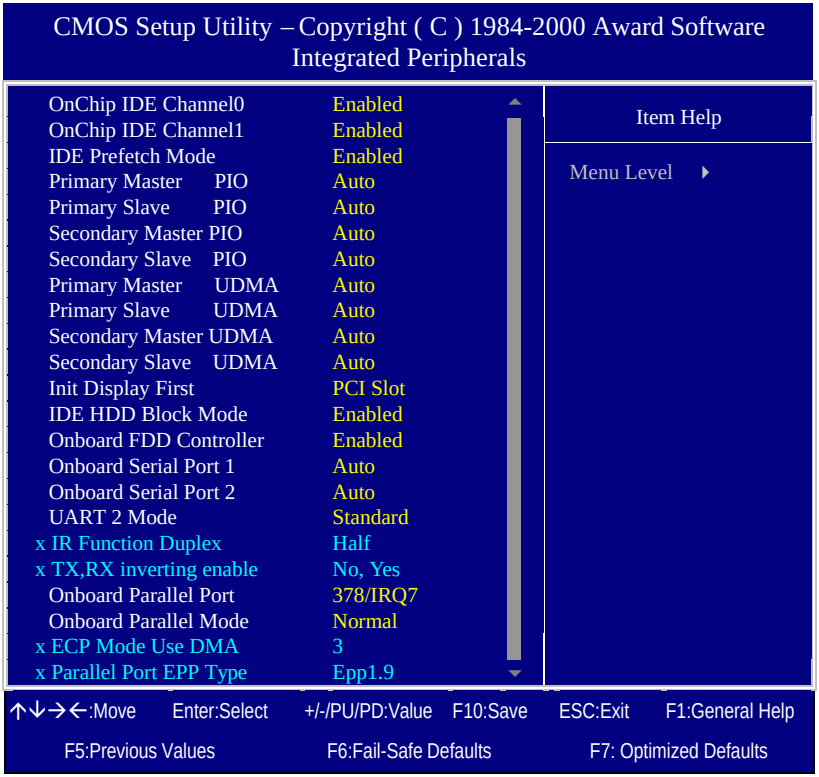
CHIPSET FEATURES SETUP (Continued)

CHIPSET FEATURES	Setting	Description	Note
PCI Dynmic Bursting	Disabled	When *Enabled*, every write transaction goes to the write buffer. Burstable transactions then burst on the PCI bus and nonburstable transactions don't.	
	Enabled		Default
PCI Master 0 WS Write	Disabled		
	Enabled	When *Enabled*, writes to the PCI bus are executed with zero wait states.	Default
PCI Delay Transaction	Disabled	The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select *Enabled* to support compliance with PCI specification version 2.1.	Default
	Enabled		
PCI#2 Access #1 Retry	Disabled	When disabled, PCI#2 will not be disconnected until access finishes (difault). When enabled, PCI#2 will be disconnected if max retries are attempted without success.	Default
	Enabled		
AGP Master 1 WS Write	Disabled		
	Enabled	When *Enabled*, writes to the AGP(Accelerated Graphics Port) are executed with one wait states.	Default
AGP Master 1 WS Read	Disabled		Default
	Enabled	When *Enabled*, read to the AGP (Accelerated Graphics Port) are executed with one wait states.	
Memory Parity/ECC Check	Disabled		
	Enabled	This item enabled to detect the memory parity and Error Checking & Correcting.	Default

3-4 INTEGRATED PERIPHERALS

Caution: Change these settings only if you are already familiar with the Chipset.

The [INTEGRATED PERIPHERALS] option changes the values of the chipset registers. These registers control the system options in the computer. The following screen shows setup default settings.



The following tables describe each field in the INTEGRATED PERIPHERALS Menu and provide instructions on how to configure the IDE controls, FDC controls, and the onboard serial and parallel ports.

3-4.1 IDE Device Controls

IDE Controls	Setting	Description	Note
On-Chip PCI IDE ➢ **Primary** ➢ **Secondary**	Disabled	Turn off the on-board IDE	
	Enabled	Use the on-board IDE	Default
IDE ➢ **Primary Master PIO** ➢ **Primary Slave PIO** ➢ **Secondary Master PIO** ➢ **Secondary Slave PIO**	mode 0-4	0 is the slowest speed 4 is the fastest speed	
	Auto	For better performance and stability, we suggest you use the Auto setting to set the HDD control timing.	Default
IDE ➢**Primary Master UDMA** ➢**Primary Slave UDMA** ➢**Secondary Master UDMA** ➢**Secondary Slave UDMA**	Disabled		
	Auto	Select Auto to enable Ultra DMA Mode support.	Default

3-4.2 Keyboard Controls

Keyboard Controls	Setting	Description	Note
Init Display First	PCI Slot	Choose which card – AGP Display card or PCI VGA card – to initialize first.	Default
	AGP		

3-4.3 IDE HDD Block Mode

	Setting	Description	Note
IDE HDD Block Mode	Disabled		
	Enabled	Invokes multi-sector transfer instead of one sector per transfer. Not all HDDs support this function.	Default

3-4.4 FDC Controls

FDC Controls	Setting	Description	Note
Onboard FDD controller	Disabled	Turn off the on-board floppy controller	
	Enabled	Use the on-board floppy controller	Default

3-4.5 Onboard Serial Ports

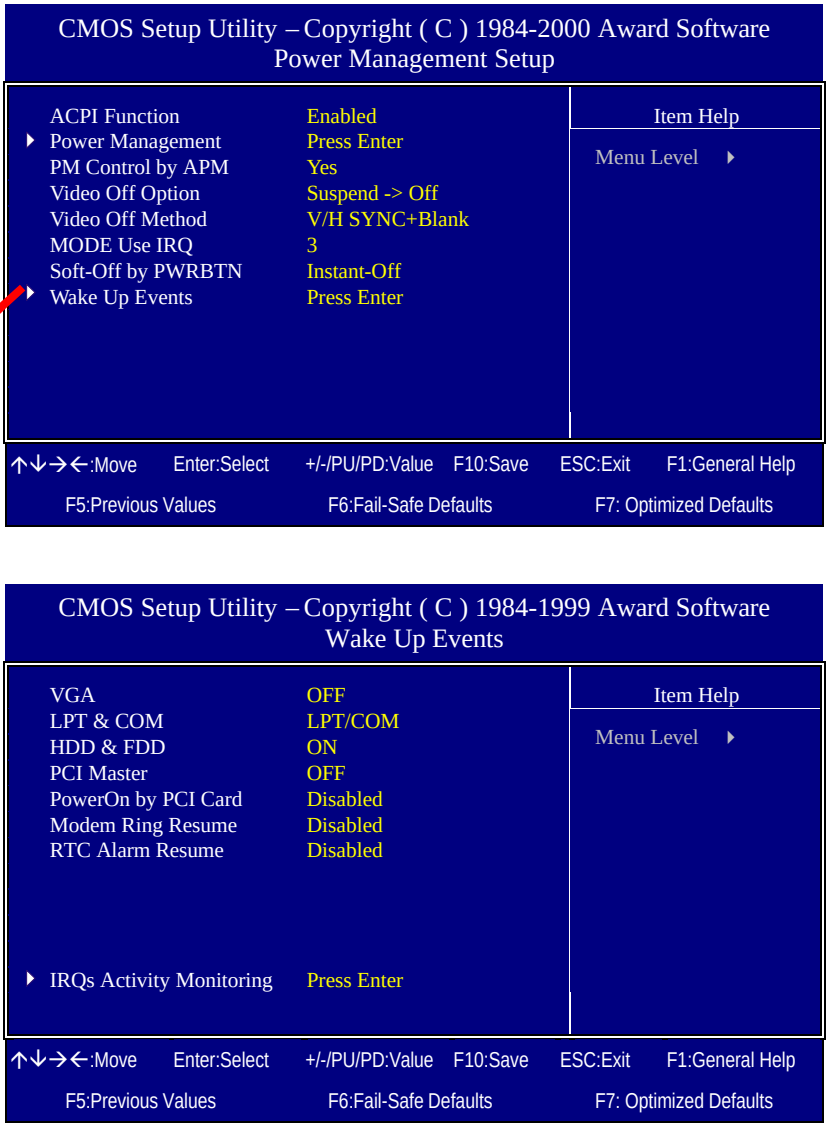
Onboard Serial Ports	Setting	Description	Note
Onboard Serial Port 1 / Serial Port 2	Disabled		
	3F8/IRQ4	Choose serial port 1 & 2's I/O address. Do not set port 1 & 2 to the same address except for Disabled or Auto.	Default (port 1)
	2F8/IRQ3		Default (port 2)
	3E8/IRQ4		
	2E8/IRQ3		
	Auto		
UART 2 Mode	Standard	The second serial port offers these InfraRed interface modes.	Default
	HPSIR		
	ASKIR		
If [UART Mode Select] is set to [IrDA]/[ASKIR]			
IR Function Duplex	Half	Choose [Half] or [Duplex] to set UR2 in half duplex mode or full duplex mode respectively. Refer to your IR device specifications to select the suitable mode.	Default
	Full		
TX,RX inverting enable	No,Yes	This item allow you to enable the TX, RX inverting which depends on different H/W requirement. This field is not recommended to change its default setting for avoiding any error in your system	Default
	No, No/ Yes, No/ Yes, Yes.		

3-4.6 Onboard Parallel Ports

Onboard Parallel Ports	Setting	Description	Note
Onboard Parallel Port	Disabled	Choose the printer I/O address.	
	378/IRQ7		Default
	3BC/IRQ7		
	278/IRQ5		
Parallel Port Mode	Normal	The mode depends on your external device that connects to this port.	Default
	EPP		
	ECP		
	ECP+EPP		
If [Parallel Port Mode] is set to [ECP] mode			
ECP Mode use DMA	3	Choose DMA3	Default
	1	Choose DMA1	
If [Parallel Port Mode] is set to [EPP] mode			
Parallel Port EPP TYPE	EPP 1.9	Select EPP port type 1.9	Default
	EPP 1.7	Select EPP port type 1.7	

3-5 POWER MANAGEMENT SETUP

The [POWER MANAGEMENT SETUP] sets the system's power saving functions.



After you have completed the Power Management Setup, press [Esc] to return to the Main Menu.

3-5.1 Power Management Controls

Power Management Controls	Setting	Description			Note
ACPI function	Disabled				
	Enabled	ACPI (Advanced Configuration Power Management Interface)			Default
Power Management		Lets you define the HDD and system power down times.			Default
		Doze timer	Standby timer	Suspend timer	HDD power down
	Min Saving	1 Hour	1 Hour	1 Hour	15 Min
	Max Saving	1 Min	1 Min	1 Min	1 Min
PM Control by APM	Yes	When enabled, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock. If Advance Power Management (APM) is installed on your system, selecting Yes gives better power savings.			Default
	NO				
Video Off Option	Suspend --> Off	When enabled, this feature allows the VGA adapter to operate in a power saving mode.			Default
	Always On All Modes --> Off				
Video Off Method	V/H Sync+Blank	Selects the method by which the monitor is blanked.			Default
	Blank screen				
	DPMS				

Power Management Controls (Continued)

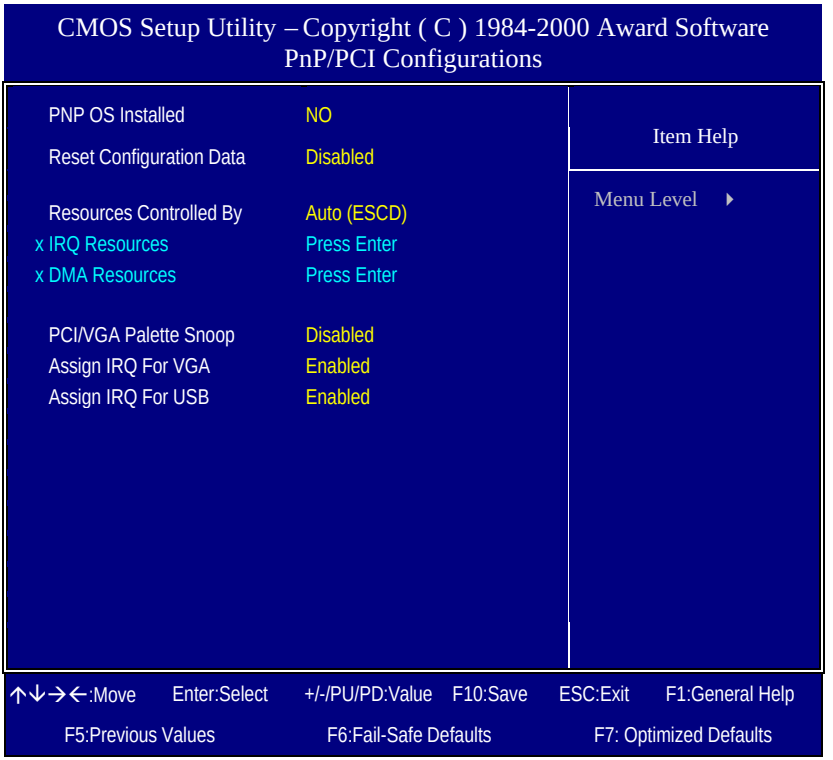
Power Management Controls	Setting	Description	Note
MODEM Use IRQ	3	Assigns an IRQ# to the modem device.	Default
	3-11, NA		
Soft-Off by PWR-BTTN	Instant-off		Default
	Delay 4 Sec.	Turns off the system power 4 seconds after pushing the power button.	
Wake Up Events	Press Enter	Select items that will wake up your system when in one of sleep modes. Press enter to go the select item page.	

Wake Up Events	Setting	Description	Note
VGA	OFF		Default
	ON	You can set the VGA awakens the system.	
LPT & COM	LPT/COM	When *On of* LPT & COM, any activity from one of the listed system peripheral devices or IRQs wakes up the system.	
	NONE, LPT, COM		Default
HDD & FDD	OFF		Default
	ON	When *On of HDD* & FDD, any activity from one of the listed system peripheral devices wakes up the system.	
PCI Master	OFF		
	ON	When *On of PCI Master*, any activity from one of the listed system peripheral devices wakes up the system	Default

Wake Up Events	Setting	Description	Note
PowerOn by PCI Card	Disabled	If enabled any PCI interrupt will wake up the system.	
	Enabled		Default
Modem Ring Resume	Disabled	An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state.	
	Enabled		Default
Resume by Alarm	Disabled	The system ignores the alarm.	Default
	Enabled	Set alarm to power on the system by the date (1-31) or time (hh:mm:ss). If the date is set to [0], the system will self-power on by alarm everyday at the set time.	
IRQs Activity Monitoring (Press Enter)	Primary	IRQ3(COM2), IRQ4(COM1), IRQ5(LPT2), IRQ6(Floppy Disk), IRQ7(LPT1), IRQ12(PS/2 mouse), IRQ13(Coprocessor), IRQ14(HardDsik)	
	Secondary	IRQ9(IRQ2 Redir), IRQ10(Reserved), IRQ11(Reserved)	
	Disabled	IRQ8 (RTC Alarm), IRQ15 (Reserved)	

3-6 PNP/PCI CONFIGURATION SETUP

This option sets the Motherboard's PCI Slots.



Note: Starred (*) items will disappear when the [Resources Controlled By] option is set to [Auto].

After you have completed the PCI Slot Configuration, press [Esc] and follow the instructions on your screen to save your settings or exit without saving.

3-6.1 PNP/PCI Configuration Controls

PNP/PCI Controls	Setting	Description	Note
PnP OS Installed	Yes	Set this field to [Yes] if you are running Windows 95, which is PnP compatible.	
	No	If the OS you are running does not support PnP configuration.	Default (If there is any doubt, set this field to [No])
Reset Configuration Data	Disabled	Retain PnP configuration data in BIOS.	Default
	Enabled	Reset PnP configuration data in BIOS.	
Resources Controlled By	Manual	BIOS does not manage PCI/ISA PnP card IRQ assignment.	
	Requires to assign IRQ-# and DMA-# to PCI or ISA PnP manually. IRQ-3,4,5,7,9,10,11,12,14,15 assigned to: _ DMA-0,1,3,5,6,7 assigned to: _		
	Auto (ESCD)	The Plug-and-Play BIOS auto manages PCI/ISA PnP card IRQ assignment automatically.	**Recommended**
If [Resources Controlled By] is set to [Manual]			
IRQ-# and DMA-# assigned to:	PCI/ISA PnP	Choose IRQ-# and DMA-# assigned to PCI/ISA PnP card.	IRQ-3,4,5,7,9,10, 11,12,14,15 DMA-0,1,3,5,6,7
	Legacy ISA	Choose IRQ-# and DMA-# assigned to Legacy ISA card.	IRQ-3,4,5,7,9,10, 11,12,14,15 DMA-0,1,3,5,6,7
Under this item the user can assign an IRQ to a PCI slot. However, there under some conditions the IRQ will not be assigned as selected under this item: 1. IRQs 0, 1, 2, 6, 8, 13 can NOT be assigned, because they are fixed. 2. IRQs 5, 9, 10, 11 are available 3. IRQs 3,4,7,12,14 and 15 will only be assigned if they are free. See the table below on how to free them:			

PNP/PCI Configuration Setup (Continued)

PNP/PCI Setup	**Setting**	**Description**	**Note**
Interrupt Line	How to set the BIOS to release the IRQ to the PnP Interrupt pool: PnP / PCI configuration		Integrated Peripherals
IRQ 15	IRQ 15: **PCI / ISA PnP**		On-Chip Secondary PCI IDE: **disabled**
IRQ 14	IRQ 14: **PCI / ISA PnP**		On-Chip Primary PCI IDE: **disabled**
IRQ 12	IRQ 12: **PCI / ISA PnP**		*Interrupt 12 will be released by the PnP BIOS automatically if the PS/2 Mouse Port is not used.*
IRQ 7	IRQ 7: **PCI / ISA PnP**		Onboard parallel port: **disabled**
IRQ 4	IRQ 4: **PCI / ISA PnP**		Onboard Serial port 1: **disabled**
IRQ 3	IRQ 3: **PCI / ISA PnP**		Onboard Serial port 2: **disabled**
4. Your OS may reassign another interrupt to a PCI slot after BIOS passes control to the OS, especially if you use Windows 95, 98 or NT.			
Assign IRQ For VGA/USB	Disabled	BIOS will assign IRQ for VGA/USB port.	
	Enabled	BIOS won't assign IRQ for VGA/USB port.	Default
5. Your OS may reassign another interrupt to a PCI slot after BIOS passes control to the OS, especially if you use Windows 95, 98 or NT.			
INT Pin 1/2/3/4 Assignment	Auto	Set to Auto the BIOS will using IRQs Automatically.	Default

3-6.2 MULTI I/O ADDRESSES

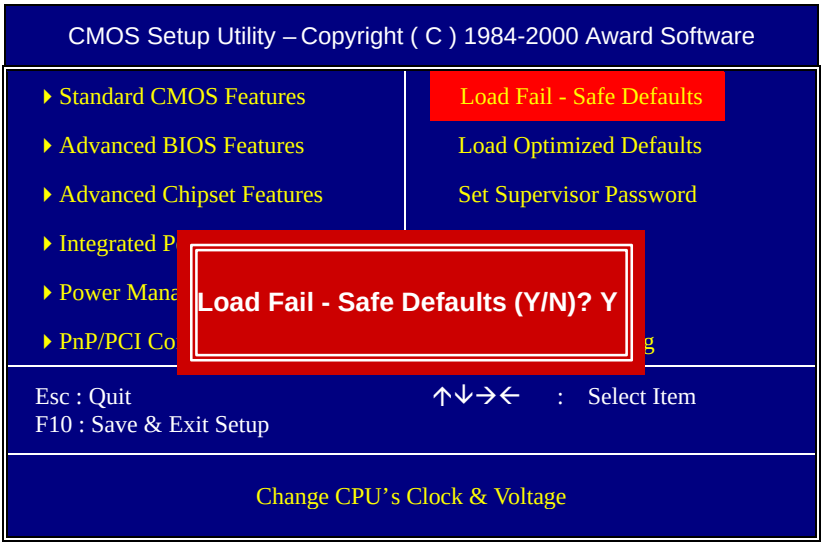
Default settings for multi-I/O addresses are as follows:

Port	I/O Address	IRQ	Status
LPT1	378H	7	ECP/EPP
COM1	3F8H	4	
COM2	2F8H	3	

Warning: If a default I/O address conflicts with other I/O cards such as sound card, you must change one of the I/O addresses to remedy to this address conflict. (I/O addresses can be adjusted from the BIOS Setup Utility)

3-7 LOAD Fail-safe DEFAULTS

Select the [Load Fail-Safe Defaults] option from the Main Menu to load the system values you have previously saved. This option is recommended if you need to reset the system setup and to retrieve the old values.

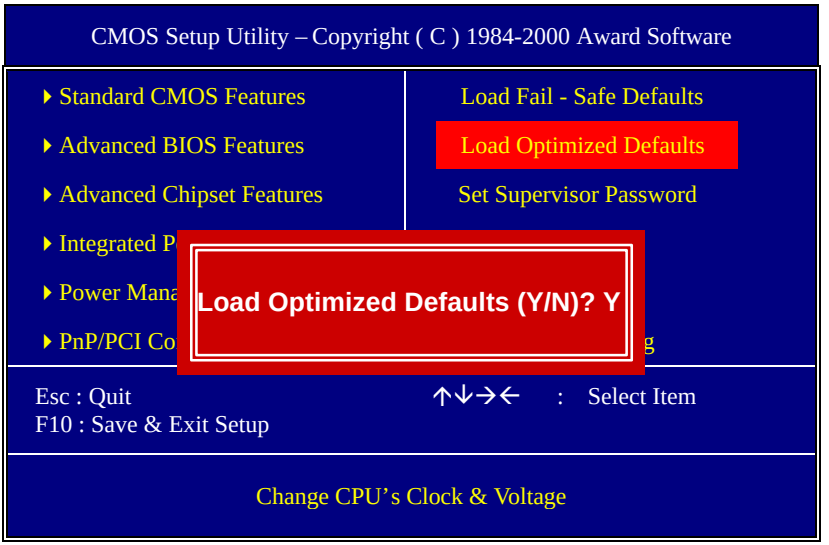


Type [Y] to use the Setup Defaults followed by [Enter] or otherwise [N] to return to the Main Menu and keep current values.

Warning: If you run into any problem after changing the BIOS configuration, please load the SETUP DEFAULTS for stable performance.

3-8 LOAD Optimized DEFAULTS

Select the [Load Optimized Defaults] option from the Main Menu to load the system values you have previously saved. This option is recommended if you need to reset the system setup and to retrieve the old values.



Type [Y] to use the Setup Defaults followed by [Enter] or otherwise [N] to return to the Main Menu and keep current values.

Warning: If you run into any problem after changing the BIOS configuration, please load the SETUP DEFAULTS for stable performance.

3-9 SUPERVISOR PASSWORD

Based on the setting you have made in the [Security Option] of the [BIOS FEATURES SETUP] section, the password prevents access to the system or the setup program by unauthorized users. Follow this procedure to set a new password or disable the password:

1. Choose [BIOS FEATURES SETUP] in the Main Menu and press [Enter]. Select the [Security Options] item and set the field to:
   a. [System]: The password is required every time the system is booted. This means only a person who knows the password can use this computer.
   b. [Setup]: The password is required only when you attempt to enter the BIOS Setup program.

2. Choose [SUPERVISOR PASSWORD] from the Main Menu and press [Enter]. The following prompt appear:

   Enter Password:

Warning: If you forget or lose the password, the only way to access the system is to set jumper JP5 to clear the CMOS RAM. All setup information is lost and you must run the BIOS setup program again.

Note: If you do not wish to use the password function, press [Enter] directly and the following message appears:

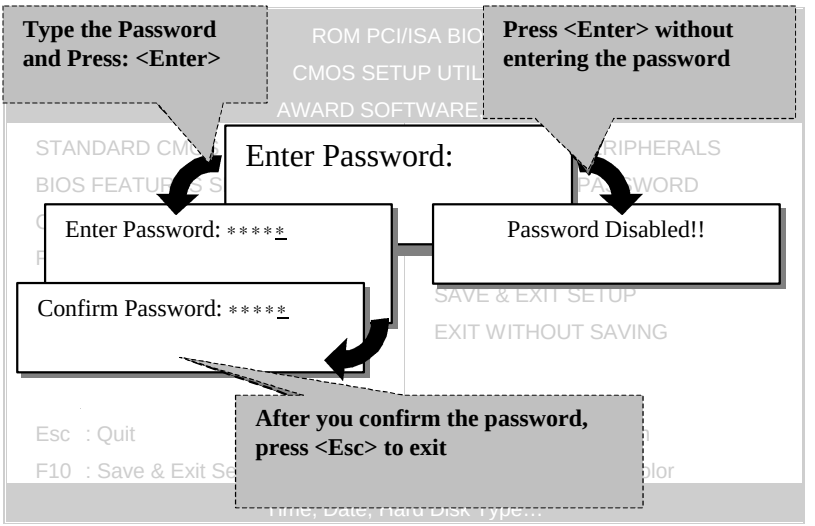
Password Disabled!!

3. Enter your new password and press [Enter]. The following message appears, prompting to confirm the new password:

Confirm Password:

4. Re-enter your password and then press [Enter] to exit to the Main Menu.

This diagram outlines the password selection procedure:



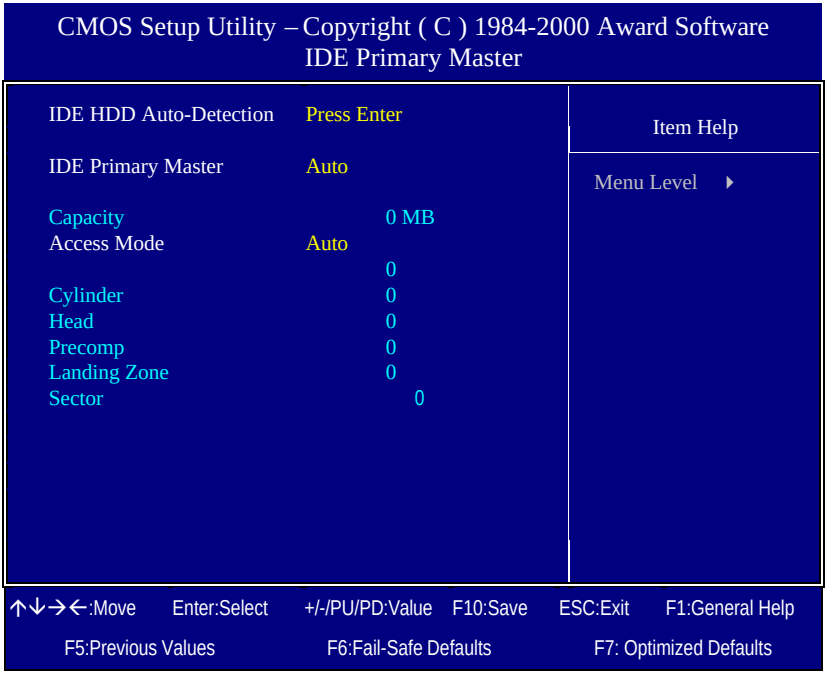
3-10 USER PASSWORD

When the user password option is on, you are not allowed to change any setting in the [CMOS SETUP UTILITY] except for changing the user's password.

The password setting procedure is similar to that for the [SUPERVISOR PASSWORD] (Refer to section 3-9).

3-11 IDE HDD AUTO DETECTION

This Main Menu function automatically detects the hard disk type and configures the [Standard CMOS Features] accordingly.



Note: This function is only valid for IDE type of hard disk drives.

Chapter 4

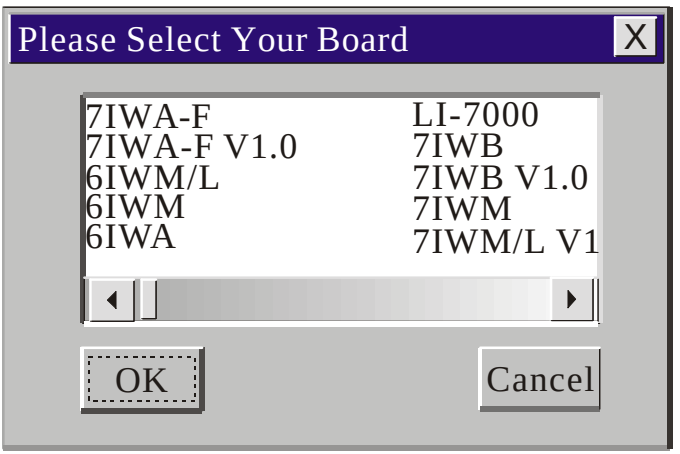
DRIVERS INSTALLATION

Your SY-5EMA Pro Super 7™ Motherboard comes with a CD-ROM labeled "SOYO CD." The SOYO CD contains the user's manual file for your new Motherboard, the drivers software available for installation, and a database in HTML format with information on SOYO Motherboards and other products.

Step 1. Insert the SOYO CD into the CD-ROM drive

The SOYO CD will auto-run, and the SOYO CD Start Up Menu will be as shown.

If you use Windows NT, the SOYO-CD will not detect your motherboard type. In that case the following dialog will pop up, please choose your motherboard and press OK. Now the SOYO-CD Start Up Menu will be shown.



(SOYO CD Start Up Program Menu)

If you use Windows 95 or 98, the SOYO CD Start Up Program automatically detects which SOYO Motherboard you own and displays the corresponding model name.

The user's manual files included on the SOYO CD are in PDF (Postscript Document) format. In order to read a PDF file, the appropriate Acrobat Reader software must be installed in your system.

Note: The Start Up program automatically detects if the Acrobat Reader utility is already present in your system, and otherwise prompts you on whether or not you want to install it. You must install the Acrobat Reader utility to be able to read the user's manual file. Follow the instructions on your screen during installation, then once the installation is completed, restart your system and re-run the SOYO CD.

Step 2. Install Drivers and Utilities

- The following describes the best way of installing Windows 95 or Windows 98 on your 5EMA Pro Motherboard:

➢ The following BIOS default settings should not be changed:

1. The 'OnChip USB Controller' item under 'Chipset features Setup' is set to enabled.
2. The 'USB Assigned IRQ' item under 'PnP/PCI Configuration is set to enabled.

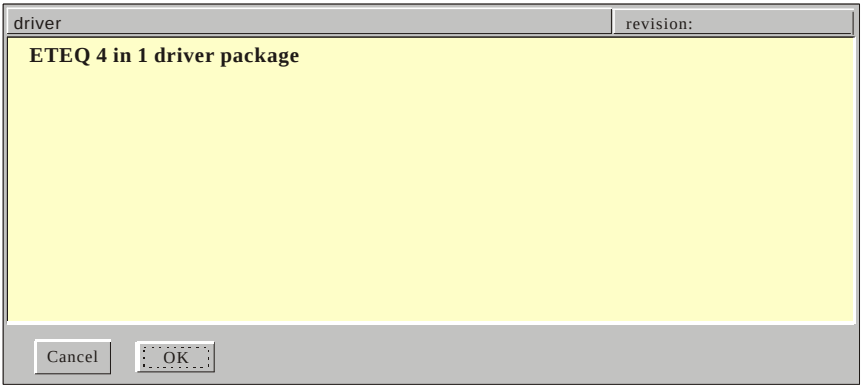
- You MUST have these two items enabled for Windows 95/98 to run properly on your system.

➢ Install Windows 95/98

➢ If you installed Windows 95 you will now need to upgrade your USB driver by running the following program on your Windows CD:
Win95/OSR2/Usbsupp/USBsupp.exe

➢ After installation of windows, you will need to install the ETEQ drivers. Follow the instruction below.

Click the ***Enter Install the drivers*** button to display the list of drivers that can be installed on your Motherboard. The start-up program displays the drivers available for the 5EMA+V1.X and the Windows version you use. Click the Install drivers button to display the list of drivers that can be installed on your Motherboard. The start-up program displays the drivers available for the 5EMA Pro.



(Driver Installation Menu)

A short description of all available drivers follows:

➢ **ETEQ 4in1 driver package**

The 4 in 1 driver package includes all drivers your motherboard needs.

After selecting this driver package, one driver will be installed automatically (the IRQ remapping utility), the other three are installed if selected. By default all three drivers are selected. A description of the 4 drivers follows:

—**Bus Master PCI IDE Driver**

This driver will speed up the data-transfer rate to and from the harddisk.

—**AGP VxD Driver**

This driver must be installed in order to be able to make use of the on-board AGP Video functionality.

—**ETEQ Chipset Functions Registry**

This driver will make the necessary changes to the Windows registry, in order to make sure that Windows has no problems recognizing your ETEQ chipset.

—**IRQ remapping utility (This driver is installed automatically)**

This utility will remap the IRQ lines to make sure that everything functions properly under Windows.

Select which driver you want to install and click OK, or click Cancel to return to the main menu. When the installation program of a driver starts running the SOYO-CD will exit.

Note: When the installation is complete, most drivers require to restart your system before they can become active.

Step 3. Check the Latest Releases

Click the 'Check the latest Releases' button to go the SOYO Website to automatically find the latest BIOS, manual and driver releases for your motherboard. This button will only work if your computer is connected to the internet through a network or modem connection. Make sure to get your modem connection up before clicking this button.


SOYO